FISCAL YEAR 1987 DOE BUDGET AUTHORIZATION: ENVIRONMENTAL RESEARCH AND DEVELOPMENT

HEARING

BEFORE THE

SUBCOMMITTEE ON NATURAL RESOURCES, AGRICULTURE RESEARCH AND ENVIRONMENT

OF THE

COMMITTEE ON SCIENCE AND TECHNOLOGY HOUSE OF REPRESENTATIVES

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FISCAL YEAR 1987 DOE BUDGET AUTHORIZATION: ENVIRONMENTAL RESEARCH AND DEVELOPMENT

THURSDAY, MARCH 6, 1986

HOUSE OF REPRESENTATIVES,
COMMITTEE ON SCIENCE AND TECHNOLOGY,
SUBCOMMITTEE ON NATURAL RESOURCES,
AGRICULTURE RESEARCH AND ENVIRONMENT,
Washington, DC.

The subcommittee met, pursuant to notice, at 2:17 p.m., in room 2318, Rayburn House Office Building, Hon. Tim Valentine presiding.

Mr. VALENTINE. I apologize for these few minutes of tardiness. We had a vote.

The Subcommittee on Natural Resources, Agriculture Research and Environment will come to order.

Today, we commence our examination of the President's fiscal year 1987 budget request for environmental programs of the Department of Energy. These programs are designed to assure departmental compliance with environmental laws and regulations, to assure protection of the health and safety of DOE workers and the public, and to conduct long-term and multidisciplinary research on the health and environmental impacts of energy technologies.

DOE's total environmental program request for fiscal year 1987 is $273.8 million, which is $45.2 million above fiscal year 1986.

The major portion of this increase, $29 million, is requested for new initiatives in the environment, safety, and health program, and the remaining $16.6 million will be added to the biological and environmental research program.

Although I am encouraged by the new interest shown by the Department for their environmental programs, I am troubled by the reasons that increased funds were deemed necessary for the environment, safety and health program.

In part, these initiatives are in response to a critical report issued last spring by Dr. Kane of the University of California.

Dr. Kane, who will be one of our witnesses today, stated in his report, and I quote,

> The current state of [the] Environment, Safety and Health [office] is a disgrace. It has become a toothless watchdog guarding the safety and environmental integrity of one of the potentially most hazardous undertakings in the world.

This is a description of the program which has the responsibility to protect the health and safety of DOE workers and the public.

Today, we will learn how DOE intends to follow Dr. Kane's recommendations.

In addition, we will also examine the fiscal year 1987 budget for those aspects of the Department's programs for which this subcommittee has jurisdiction. We will receive testimony from three witnesses today, beginning with Dr. James Kane from the University of California.

Our second witnesses is Mary Walker, the recently appointed Assistant Secretary for Environment, Safety and Health. Ms. Walker, this is the first time that you have appeared before our subcommittee, and I would like to take this opportunity to welcome you.

Our old friend, the subcommittee's old friend, Dr. Alvin Trivelpiece, Director of the Office of Energy Research, will be our third and final witness.

Before turning to these witnesses, I would like to recognize, of course, my distinguished colleague from the State of Rhode Island, Congresswoman Claudine Schneider.

Miss. SCHNEIDER. Thank you.

I think the Department of Energy could not have said it better about the environmental programs when it stated that its budget request was, and I quote:

> One of the extraordinary characteristics of the biological and environmental research program is its comprehensiveness. The global nature of its scope compelled by its mission is unique to the nation and perhaps to the world. An example of immediate societal concern is—radon research.

This, of course, is a major concern to me, and I spent a considerable amount of time making sure that we do more research into this area. I am looking forward to learning from the witnesses how much and in what way DOE will be expending some of these funds specifically for radon research and what kind of cooperative arrangement is well underway with the Environmental Protection Agency and any other Federal agencies.

But in contrast to my colleague's reaction to the minor increase in the budget, I am enthusiastically embracing this proposal because I think that it points out the awareness of Secretary Herrington that right now we are looking at basically two dynamics.

First of all, there are new methods, and there are new techniques for maintaining quality control at energy facilities that will assure the safety and the health of workers in a way that was unavailable decades ago, when many of these installations were first being built.

And, second, the reason that I think that this increase can be hopefully well spent is that there are an increasing number of energy-related or induced problems that are extremely complex and, I think, need to be thoroughly analyzed and dealt with in a timely fashion.

So, the fact that Secretary Herrington has made it clear that this budgetary increase is particularly to focus on some of our global awareness and some of the threats that we will be dealing with on a transboundary basis, I think, is significant, and I also commend the Secretary and his coworkers for suggesting that we have a longer view and take a more futuristic attitude toward preventing some of the problems and anticipating some of them by this kind of research.

So, I am looking forward to some of the specific elements of the proposals here today, and I thank you, Mr. Chairman, for the opportunity to make a few comments.

Mr. VALENTINE. Thank you, Congresswoman.

Congressman Paul Henry? Paul, would you like to make some comments?

Mr. HENRY. No comments, Mr. Chairman.

Mr. VALENTINE. All right. Dr. Kane, special assistant for the Office of Laboratory Affairs, the University of California, if you will come around, we will hear from you at this time. We are glad to have you here, sir. Your prepared statement, of course, will become a part of the record, and you may proceed in any way that you deem appropriate, bearing in mind that we need to finish by Sunday morning.

STATEMENT OF DR. JAMES KANE, SPECIAL ASSISTANT FOR OFFICE OF LABORATORY AFFAIRS, UNIVERSITY OF CALIFORNIA

Dr. KANE. Thank you, Mr. Chairman. I will do my best.

First, I do not have a written statement today. How I intend to proceed, with your permission, is to comment on the report. Really, the report says what I would like to say here today, anyway, so I will restrict my comments to commenting on the report and then let you ask questions about any aspect of it that you may have.

Before I get into this, I think I owe you a brief personal background of why I am here. I am certainly not an expert; I am not a professional in the safety business; nor am I an expert on safety.

I believe the reason I was asked to do this job was because of my previous experience. I spent 19 years at the Lawrence Livermore Laboratory, and at the time I left the Laboratory, I had responsibility for the tritium facility, the plutonium facilities, the nuclear reactor at that site, the high explosive chemical facilities at that site; so I have had quite a bit of hands-on experience at actually running these potentially very dangerous facilities.

The second was, I was in Washington since 1974 in a variety of tasks first for the AEC, then ERDA, and then the DOE.

Finally, I was a member of the Crawford committee. The Crawford committee was set up by the DOE shortly after the TMI accident, and the purpose of the Crawford committee was to ask: could this happen to us? Were there things happening within the DOE contracting area that we could be involved in—something that would be as dangerous, as demoralizing, and as bad for the country and the Department of Energy as Three Mile Island was to the nuclear power industry?

I was a member of the Crawford committee, which spent a very large amount of time looking into this question.

So, I think those are my credentials, and I repeat: I am not an expert on safety.

The motivation for this report was purely that of the Secretary of Energy. He asked me to do it. I have a deep personal interest in this. As I pointed out, I have been a member of the AEC/ERDA/DOE family for my entire professional career, and so I had an interest in doing it.

Now, what I did and did not do in this report: what I did do was to confine myself to the administrative, what I will call later the oversight, aspect of safety and environment within the Department of Energy.

What I did not do is equally important. What I did not do is assess the status of health, safety, and environment out in the field. That would be an enormous task. I accomplished my task in Washington last year over about a 4- to 6-week period.

To assess the status of safety, health, and environment across the 80,000-person contracting complex the DOE runs would be a job that would take a many-person task force a great deal of time—I did not do that. I restricted my attention to what I will call the oversight function.

With that as an introduction, I am going to start in on what the report involved.

In the first place, I am sure you are all aware—but I could not state it more forcefully—the Department of Energy runs a number of truly unique—in the sense of the word, meaning there is only one of them—and potentially very hazardous facilities around this country. And I need only mention a few, which you may not recognize, but perhaps you do.

The most powerful reactor in the world is run out at the Hanford site—4,800-megawatt reactor—the production facilities for plutonium and tritium, producing plutonium in kilogram quantities and tritium in very large classified quantities. They work with high-energy explosives, the highest of energy, the very most exotic and newest explosives. They assemble nuclear weapons, and they transport them—well, I should not say that; they do not do all the transporting, but at least they assemble their nuclear weapons.

Every one of those operations is truly unique in the free world, at least, or at least in the United States to the Department of Energy facilities, and they have to be done in a safe and environmentally responsible manner.

What I am expressing here is the fact that this is a big task, indeed, to oversee 80,000 people doing unique and often uniquely potentially dangerous operations of that scope.

I could go on much further with the other hazards; I have not even scratched the surface of the number of potentially hazardous operations out there.

The philosophy is the next thing I would like to go to. I have told you now that yes, there is a big job out there and it has to be done well. What has been the philosophy of the Department, and from the very time that the AEC, and before that, the Manhattan project, set up these operations. Its philosophy was always that the person doing the experiment had to do it safely. That is a responsibility that you cannot duck. That is the ultimate guy on the line that says, I will do this job that is safe to me, safe to my coworkers, and safe to the public. And that still is the assignment given today.

My personal opinion is: that is the only way that works for an agency that does highly different, research-type operations. Repetitive operations can be governed by a rulebook. It is very easy if you are supposed to do the same thing every day, day in and day out, as in a manufacturing facility. You set up rules on how you do it.

It is much more difficult to run a safe operation where every day you do something different. And in my opinion, the only way that can be done is by the expertise of the individuals doing the job. There is no regulatory machine that you can set up that will be sufficiently expert to judge those operations.

So, the basic responsibility is on the person doing the experiment. The next question is: is that enough? The answer has always been in the DOE, the AEC, and ERDA: no, that is not enough; that the person doing the experiment is inevitably subject to programmatic pressures. He not only has to get the job done; often, he has to get it done on a rapid time scale. He has to meet demanding requirements. And the question always is: will that individual lean a little on the side of doing, rather than doing it safely;

Now, we don't think people do that. But we also think the price is so high and the risks are so great that we cannot afford to assume that the person doing the operation will do it totally safely, and, therefore, we have another and parallel system set up, which is the oversight system. And their job is to make sure that the job is being done safely and environmentally in a sound way, and they operate free of programmatic pressures.

So that is the oversight function.

Now, if you think about it a minute, you find out that the oversight people have to be every bit as skilled and as technically sophisticated as the people doing the experiment. How else can they say that is unsafe unless they understand down to the very nuts and bolts the operation that is going on.

The answer is they cannot, and so the oversight people, too, are not a bunch of bookkeepers; they are not a bunch of people just reading a rulebook and saying you can't do it this way; you have to do it that way. No such rulebook exists.

So, that has been the Department philosophy, and I think the first point that I would like to make is: my personal opinion is that it is an excellent philosophy, and if there is something wrong with it, it should be fixed, not abandoned.

Now, my conclusion—to jump from the philosophy to the conclusion—was clear: if you ask me how well was this dual pathway approach working, it was, not too well. My answer to that was what can we do to fix the system, not abandon it. You understand what I mean by the oversight function was not that the operations out there were unsafe, hazardous, or being done in an environmentally unacceptable way, it was that the people who were being asked, is all this being done safely, were not, in my opinion, doing the job they should do.

Now, you realize that there is a point that comes in any operation trying to accomplish a goal, where the person in charge of that operation has to make a decision, is this operation safe enough? And that confluence of those two points of view: one, the operational point of view, saying we should do something, and the other, the oversight view, saying maybe it is not being done safely enough.

That person making that decision, which in the Department of Energy is generally the Under Secretary, has to have a source of excellent advice on both sides. And that is the whole story that I am talking about today. How excellent was the advice that the Under

Secretary, or whoever were making these potentially very hazardous decisions—how good was the advice?

Well, as I said a minute ago, my conclusion was that things were not working too well; that the advice he was getting could be improved on; and that something should be done.

Now, I did make a list of recommendations, and I would like to restrict my discussion of these recommendations to the two very, very important ones, because the other six are more or less—I would be pleased to answer questions, and I am sure that people from the Department will be glad to answer questions on those. But the two recommendations really boil down to kind of simple—sometimes it is hard to state in one sentence what you mean, and maybe I should not try—but they had to do something about the oversight function. It had to be revitalized.

Now, just how you do this, is something I cannot give in a recipe. I gave a lot of suggestions. Suggestions are very common sense. You make this a position that people are proud to serve in. You make it a position that is recognized to be influential within the Department. You make it a position that young people coming up through the organization will like to work for for a few years, because it is a place that the Secretary regards very highly; that the Nation regards very highly.

So you have to somehow raise the stature of this office, and I use the term revitalize; I gave a number of recommendations. Let me pass over to the second one and then come back and treat them together.

The second one—to boil it down to a sentence—was, the Department must get its environmental strategy, must get it in hand, I guess, or get their minds all settled on what is their environmental strategy. Now, by environmental, I mean more toxic site cleanup and improvement of discharges, both the CERCLA and the RCRA, and pardon me for using those acronyms, operations.

My recommendation there was again kind of simple and one that is straightforward. We should assess what problems we have, decide in what order we will attack them, and decide how we will budget for them. And that is not very complicated, either.

Those are really the two recommendations that I think I will discuss for just a few more minutes, and then I will conclude.

The first one—back to this oversight function—if you think that just obeying the things I happen to think of here will solve this question, I would like to tell you that you are wrong. It is far more than that.

And let me just read what I gave a lot of thought to in my concluding statement.

I believe that following the recommendations in my report is a necessary first step in the reversal of the long-term decline in the Department's treatment of environment and safety. But that won't solve the problem.

As I see it, the only long-range solution is an overall raising of the Department's consciousness on these vital subjects. This means attention by top management, the restoration of an aggressive, technically competent environmental safety and health office, and an increasing awareness that the environmental issues must be given greater emphasis at all levels.

I think that paragraph conveys what I tried to say in my report far more than "have you followed Kane's recommendation No. 3," because those are all just means to an end.

So, my conclusion is that the philosophy and the approach taken by the Department of Energy toward assuring that its operations are conducted safely and environmentally soundly is fine. It has to be fixed. An eye should be kept on it. But don't abandon it.

I am a great proponent in this case of regulation by expertise, not by the rulebook. There are a lot of analogies in the Federal system out here, and one of them might be, for instance—one I like to use—is certification of new airplanes for airworthiness: how do you possibly get people who can do it as well as the people who designed the aircraft in the first place? That's a problem. And we have a similar problem here: how can you get safety experts as expert as the people that are carrying out the operations. Because, remember, these are nonroutine operations.

So, I think we have to fix that system.

I am not a proponent of regulation, external regulation, by a rulebook. I think we have to challenge, to attain and maintain a level of expertise in the oversight office.

Probably the most important thing of all is the value that the Department leadership places on this activity. And again, I quoted something I did not give credit for, a retiring president at du Pont, a corporation that has a fantastically good record of industrial safety—they have conducted for years extraordinarily hazardous operations—and this is really a quote from the president of du Pont, Mr. Jefferson, although I kind of crabbed it off here:

> The best measure of an organization's dedication to safety is not the number of safety inspectors, but the number of hours per week the chief executive officer devotes to safety issues. People working for him have to know he thinks it's important—he or she thinks it's important.

So, that is what I meant by raising the Department's consciousness. Now, I know you are going to ask me questions on, well, what has happened in the interim since you wrote the report. I will tell you insofar as I can, although I don't—some of my answers will be I don't know, and I will have to defer to the Department of Energy's witnesses for this.

But my impression, from a couple of external things, is that that latter aspect has really been accomplished. The Secretary has issued a Department-wide statement of approach on environment, safety, and health. He is saying that it is important; that he is 100 percent behind it; that he insists that the Department operate in a environmentally sound manner and get on top of their environmental situation, rather than always being in a mode of response, which makes any department look terrible, to be told by others that they are in trouble.

The second thing: I understand he intends to issue a similar policy statement on safety.

And I think those statements, backed up by proper attitudes and action by the Department's leadership, go far more than literally following the recommendations I gave.

So, with that, long before Sunday morning, I will quit.

Thank you.

[The above-mentioned report follows:]

REPORT AND RECOMMENDATIONS ON THE DEPARTMENT OF ENERGY'S MANAGEMENT ACTIVITIES IN ENVIRONMENT, SAFETY AND HEALTH

MOTIVATION FOR PREPARING THIS REPORT

This report was prepared at the request of Secretary Herrington, who asked that the status of this important part of DOE's responsibility be appraised. It was not prompted by a crisis, an accident, or extra-Department pressures. There is no indication that the Department's operations are unsafe, or are endangering the public health. Nevertheless, there is little doubt that the motivation came, at least in part, from the perception that the health of the Department's safety and environmental oversight function is not sound.

The conclusions given in this report were drawn from information obtained from three sources: 1) a careful reading of several previous reports on safety oversight by individuals both inside and outside the Department*, 2) discussions with several Department officials having expertise in matters related to questions of environment, safety and health, and 3) my personal experience as a member of the DOE's "Crawford" Committee, which conducted an extensive investigation of the Department's nuclear reactor operations shortly after the Three Mile Island accident. Although the conclusions I made are solely my responsibility, I believe there is a general agreement with my recommendations. The written reports were virtually unanimous in their recommendations, and most are similar to those on safety oversight that will be given later in this report.

The philosophy of this report is to restrict its recommendations to those of a general, managerial nature. Its format is first to recommend actions, discuss briefly the reasons behind them, and, in a few cases, to suggest options that are thought to be most appropriate for responding to the recommendations.

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*Selected References

1. DOE/US-0005, "A Safety Assessment of Department of Energy Nuclear Reactors," Executive Summary, March 1981

2. GAO Report, "Better Oversight Needed for Safety and Health Activities at DOE's Nuclear Facilities," Chapter 6, EMD-81-108, July 27, 1981.

3. GAO Report, "DOE's Safety and Health Oversight Program at Nuclear Facilities Could Be Strengthened," Chapter 4, GAO/RCED-84-50, November 30, 1983.

4. Letter - J. Hunter Chiles, III to W. Kenneth Davis, Deputy Secretary, "Safety Oversight - The Customer's Point of View".

As will emerge subsequently, the problems I perceive cannot be solved simply; they are a product of failure by many participants in managing the Department over a period of perhaps a decade. The Department has proclaimed its dedication to the principle of safety and environmental oversight, while at the same time it has allowed the organization responsible for this oversight, the Office of Environment, Safety and Health (ES&H), to atrophy.

BACKGROUND

The Department of Energy conducts a very large and complex high technology operation. The Department's projects involve working with a variety of processes, substances and devices, some of them unique to DOE operations, that are potentially hazardous both occupationally and environmentally. It is clearly the responsibility of the DOE to accomplish its missions without undue risk to its workers, the general population, or the environment.

Most of the Department's programmatic work is done at contractor laboratories. The basic responsibility and authority for conducting the work safely and with proper regard for the environment is theirs; this is the DOE's fundamental operational tenet. The responsibility for assuring that the laboratories are in fact doing the work properly goes up the programmatic chain of authority to the Assistant Secretaries, who are in charge of each program, and ultimately to the Secretary.

Yet there is a fundamental, inevitable tension between the two goals of programmatic accomplishment and a safe, environmentally sound operation. In recognition of this tension, it has been the practice of DOE and its predecessor agencies to counterbalance the programmatic viewpoint with one of independent oversight, in the form of an organization that acts as an advocate for safety and environmental acceptability. Those conducting the programs are not relieved of their basic responsibility for this aspect of their programs, but an additional perspective, free from the influence of programmatic pressure, is brought to bear. The success of this dual approach has been amply demonstrated by the excellent record of the DOE facilities.

If it is to work properly, this program-oversight dualism must have equal dynamism, knowledge and technical expertise on both sides. It must also have an arbiter, an official at the highest level of the organization, who is responsible for all aspects of the Department's operations. In the rare instances when there is an unresolved disagreement between the programmatic and the oversight viewpoints, this official must be prepared to weigh the opposing opinions, and to make decisions. This resolution of these safety and environmental issues is one of the heaviest responsibilities of managing potentially hazardous operations, especially when the postulated accidents have a low probability of occurring, yet extreme consequences if they do. The tragedy of Bhopal and the accident at Three Mile Island are reminders that safety and environmental issues must have regular and serious attention at the highest levels of management. This is where the ultimate responsibility lies.

There is no reason to believe that this operational philosophy, as briefly described, is not sound. Quite the opposite is true. The merits of separating programmatic responsibility and environment and safety oversight are time proven. The recommendations offered subsequently are not directed toward changing this philosophy; it is judged to be valid. The recommendations are intended instead to ensure that this philosophy is followed.

RECOMMENDATIONS

I am making eight recommendations. The first two are by far the most important.

Recommendation 1--Revitalize the Environment, Safety and Health Office

The current state of ES&H is a disgrace. It is widely perceived as having "no clout", and of being ignored by senior management unless a crisis develops. Morale is low, and as successive reports recommending action are followed by no action, it sinks further. It is not an office that would be attractive to aggressive young people on the way up. In spite of dedicated efforts by many of its staff, it has become a toothless watchdog guarding the safety and environmental integrity of one of the potentially most hazardous undertakings in the world.

The organization must become more aggressive in establishing safety and environmental policy for the Department. Environmental policy development will require far greater initiative in dealing with the EPA.

If we are to pay more than lip service to the concept of an independent safety and environmental oversight function at Headquarters, there must be a vigorous effort to revitalize the ES&H Office.

Options

This recommendation is really not amenable to a listing of options. What I have done is to list some of the steps that should be taken. The list is most certainly not complete.

(1) Place the ES&H Office at a more prominent organizational level.

(2) Designate a Departmental Safety Officer, with access to high management on a regular basis, similar to the Inspector General.

(3) Encourage an attitude of hands-on safety oversight, not one of monitoring the monitors.

These first three items are given subsequently as individual recommendations.

(4) Include reviews of ES&H in the Departmental Management Review Process.

(5) Rotate personnel from other offices, including the Field Offices, into ES&H. This should include other than professional safety personnel. Make this rotation an attractive step on a career ladder.

(6) Give the Office an active role in the Department's environmental compliance program.

(7) Encourage Intergovermental Personnel exchanges with goverment and state agencies and universities.

(8) Improve professionalism. Don't transfer in unqualified people.

(9) Sponsor an appropriate program of research on selected topics related to the ES&H mission.

Recommendation 2--Establish Organizational Responsibility and Budget Strategy for Environmental Site Cleanup

The Department has a number of sites where hazardous substances have been discharged to the environment. Many of these sites will require remedial action to be in compliance with current legislation, especially RCRA* and CERCLA*. Already several hundred potential CERCLA sites have been identified, and the characterization efforts are not yet complete. Several hundred additional sites could be identified in the future. Although only a fraction of the sites will require cleanup, remedial action costs could be in the range of billions of dollars.

The responsibility for obtaining funds and correcting the deficiencies is clear where single program operations have occurred. Responsibility is not clear or accepted at multiprogram sites. The situation has resulted from operations of several programs, some of them long ago. There is also reluctance by all to include the large remedial costs in the normal budget process, because of the fear that the costs will have to be absorbed by the program. A Departmental strategy for this situation has not yet been developed.

As a further complication, some Field Offices are significantly farther along than others in identifying the extent of their problems and requesting remedial action funds.

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*RCRA stands for Resource Conservation and Recovery Act. CERCLA stands for Comprehensive Environmental Response, Compensation and Liability Act. RCRA deals with ongoing activities involving hazardous wastes, while CERCLA deals with abandoned or inactive sites where hazardous wastes are present.

This uneven approach to environmental cleanup makes it virtually impossible to assign priorities on a DOE-wide basis. The Department must get its act together. It needs a comprehensive, well-planned approach to handling the cleanup of sites to meet environmental requirements. Without it, the Department will continue to lose credibility and could face significant interruption in its programs.

Options For Responsibility

(1) Assign full responsibility to a single program office.

2) Make Defense Programs responsible for sites under its jurisdiction and assign another program office to be responsible for all other sites.

(3) Completely decentralize to each Program Assistant Secretary.

Corresponding Options for Budget Strategy

(1) All DOE cleanup efforts would be budgeted in a prioritized, single line item budget request.

(2) Because of Congressional interfaces, the DOE cleanup efforts would be budgeted in two individually prioritized line item budget requests.

(3) Each Assistant Secretary would budget cleanup efforts at that program's sites.

Recommendation 3--Enhance The Organizational Stature of Environment, Safety and Health

Both of the GAO reports referenced in the introduction and DOE/US-0005, the "Crawford" Committee Report, gave a high priority to elevating the organizational stature of the ES&H Office. The reasoning was that such an important function should have ready access to the highest levels of Departmental administration, and should not be buried too deeply within the organization. Their recommendations were not followed.

Why this preoccupation with organizational status? In a perfect bureaucracy, an important message would get through, independent of the organizational depth of its origin.

Real organizations are not perfect. In real organizations the location of an office, either physically or on the organization chart, can convey a far more important message than the title on the door. Optics are important.

The ES&H oversight function should be organizationally located commensurate with the importance attributed to it by management. I cannot refrain from making the observation that in the past, it has been.

The ES&H oversight function is critically important to the Department, and should be properly recognized. ES&H should have a voice in Departmental issues where its opinion is relevant. Its opinions should count in office appraisals, Departmental budget submissions, contract extend-compete decisions, and other similar matters. The important role assigned to this Office warrants high organizational status.

Options

(1) The ES&H function should be placed at an organizational level comparable to that of other programs. The Assistant Secretary in charge should not have other disparate duties. The office should include a senior, highly placed career official, who would provide stability and continuity during the inevitable transitions.

(2) The Office should be staff to the Under Secretary, perhaps as the Deputy Under Secretary for ES&H, reporting directly. The office should include a senior, highly placed career official who would provide stability and continuity during the inevitable transitions.

Recommendation 4--Choose and Adopt a New Organization for Environment, Safety and Health

The current organization for ES&H was approved in April 1982. While the structure was thought appropriate at that time, it has not been fully implemented even to this date. For example, permanent Directors were not established for several key executive positions, nor were position descriptions updated.*

Since 1982 a number of changes have taken place. (1) Several functions have been transferred to other offices in the Department, (2) manpower ceilings have been reduced, and (3) environmental compliance has emerged as a high priority effort.

In view of these changes, a serious effort was initiated in 1984 to modify the organization and correct deficiencies. A structure was identified and concurred in by Management and Administration (MA), and all position descriptions were revised and have been reclassified by MA. Action on this effort has not been completed pending further Secretarial Office reviews.

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*Approximately 50% of the existing position descriptions were prepared for an organization that existed prior to 1982.

Without specifying any particular organization, it is apparent that a satisfactory structur should be established that puts additional emphasis on today's requirements, including environment, nuclear safety, and health physics.

Because of the chaos in the current organization, proper revisions will undoubtedly involve some downgrades and a reduction in force. Until this is accomplished, however, ES&H will not have a firm organizational and administrative structure to fulfill its obligations.

Recommendation 5--Issue the Recently Revised Environment, Safety and Health Nuclear Safety Orders

These orders codify the responsibilities of the various offices with respect to nuclear safety matters. The orders currently in existence should be replaced. A new version was worked out in a coordinated effort between Field and Headquarters offices over the period from June 1984 to March 1985. The new orders are in the Office of the Assistant Secretary for Management and Administration, ready for signature and issue.

The new orders were written in response to a general recognition that the current orders give far too little responsibility and authority to the ES&H oversight function. The history of this de-fanging of ES&H is not worth recounting here, other than to observe that it was probably an understandable over-reaction to the "Crawford" Committee Report.

The issuance of the new orders is necessary, but not sufficient. It should be accompanied by a revised organization of the ES&H office as recommended in the previous recommendation. The new organization will be necessary to carry out the responsibilities that the revised orders assign to ES&H.

Although I recommend the issuance of these new orders without reservation, I find the emphasis on a written definition of what ES&H can and cannot do somewhat disturbing. It is an indication of the sorry state to which ES&H has fallen. I do not believe that a technically competent safety and environment office, armed with the facts and having ready access to high Departmental officials who respect their opinions, should have to rely so heavily on authority derived from written orders. If they are good, and are right, they will be listened to, orders or not.

Recommendation 6--Designate a Departmental Safety Officer

The Deputy Assistant Secretary for Environment, Safety and Health should be designated as the Departmental Environment and Safety Officer. The Environment, Safety and Health activities of the Department need a high level spokesman. This individual should have a personal knowledge of what the Department is doing and how it works, and would provide continuity during the transitions that inevitably occur. Many managers in the DOE, especially those at the Presidential Appointee level, occupy their positions for relatively short terms. It cannot be assumed that these managers will have the requisite background, nor the time, to understand personally the various ingredients of an environment and safety program. To the degree practicable, the DOE safety functions must possess an institutional stability. The Environment and Safety Officer would provide this.

Designation of a Departmental Environment and Safety Officer also has the benefit of enhancing the perception of the function by others in the DOE organization. The Officer would be viewed as an extension of the Secretary's Office whose primary functions would be to provide independent safety assurance. The status of the Officer should be established by the Secretary's Office and occasionally reinforced. Short periodic meetings (perhaps 15 minutes on a weekly basis) with the Under Secretary would provide for necessary communications and indicate management support for the Office.

This arrangement might be thought of by some as a means to bypass the responsibilites of the Assistant Secretary responsible for ES&H. This is indeed a problem. I believe, however, that the short average tenure of Presidential Appointees makes the problem unique to government. Would the Nuclear Regulatory Commission tolerate a utility that had such rapid turnover in its Chief Safety Officers? This recommendation should be carefully considered.

Recommendation 7--Re-orient the Headquarters Environment, Safety and Health Appraisals to Put Greater Emphasis on the Adequacy of Operations

The Field Office managers have the primary responsibility to ensure adequate consideration of ES&H matters by their contractors. The Headquarters ES&H group is responsible for independently verifying that the Field Offices are carrying out this function. In the recent past, the Headquarters assessments have tended to focus on the "paper trail" developed by the Field Office staff, rather than on the operations themselves. While important, this is only a secondary measure of the effectiveness of the overall program. Experience has shown that actually observing the operations and conditions at the plants is an important and necessary step in verifying that an adequate ES&H program is indeed functioning satisfactorily.

To do this field evaluation properly requires extra effort and appropriate expertise. The Headquarters ES&H staff will need assistance. Support from service contractors, Field Office and Headquarters program personnel, consultants, DOE contractors and experts from other Agencies, such as the Nuclear Regulatory Commission or the Environmental Protection Agency, could be used. At a lower level of detail, but nevertheless essential, travel funds must be available. Use of personnel within one portion of the DOE complex to help in the review of others also has a side benefit in furthering an exchange of ideas and practices.

Recommendation 8--Consolidate Headquarters Environment, Safety and Health Functions

The deterioration of the ES&H organization has led to the proliferation of independent safety groups in Headquarters. Energy Research and Defense Programs have created or bolstered their staff organizations, while Nuclear Energy has historically maintained an active safety oversight organization. Multiple oversight organizations cause problems. They lead to a confusion of responsibility, and to duplicative and occasionally contradictory directions to the field.

This question of consolidation should be pursued. It is my impression that the Field Offices will support it enthusiastically, Energy Research and Defense Programs will agree, if they can rely on a rejuvenated ES&H, while Nuclear Energy will wish to continue an active program of its own.

Even if the reasons for maintaining separate, programmatic oversight offices are found to be persuasive, there should be a requirement that only ES&H is allowed to issue directives to the field involving matters of environment, safety or health.

CONCLUSION

For over thirty years, the DOE and its predecessor agencies have been the recognized technical authorities on the safety and environmental aspects of their programs. Reactor safety, weapons safety, and radiation safety are all three examples of fields that were originated and developed by the Department. In effect, the activities of the Department, many of them unique, have been regulated by internal technical expertise of the highest order. This internal regulation is far superior to the adversarial process. It has worked, and worked well, but it is now in serious need of attention.

The most pressing problem I have found in the Department's treatment of safety and environmental matters is that they have been almost completely neglected by top management. It is not a coincidence that the decline in the Safety Oversight Office began when the mission of the Department was expanded to include such time consuming and politically contentious activities such as energy regulation, natural gas pricing, etc. These tend to overwhelm management. Safety and environmental issues, other than those of a crisis nature, are driven out by the bureaucratic equivalent of Gresham's law.

Safety is in many ways analagous to quality control. It is more a state of mind than it is a neatly defined set of operations. It has been said that the best measure of an organization's dedication to safety is not the number of safety inspectors, but the number of hours per week the Chief Executive Officer devotes to safety issues. The same is true for environment. It is easy to ignore, until a crisis occurs.

I believe that following the recommendations in my report is a necessary first step in the reversal of the long term decline in the Department's treatment of environment and safety. But that won't solve the problem. As I see it, the only long range solution is an overall raising of the Department's consciousness on these vital subjects. This means attention by top management, the restoration of an aggressive, technically competent ES&H office, and an increasing awareness that environmental issues must be given greater emphasis at all levels.

Mr. VALENTINE. Thank you, Dr. Kane.

This perhaps is included in the report which you have filed with us, or perhaps in your statement, but let me ask you to respond to this a little differently, if you can.

Can you elaborate on the events which, in your opinion, led to this erosion in ES&H's responsibility and authority?

Dr. KANE. I can only speculate. There was no one event. I put in my report that one of the things I think contributed to it was when ERDA was broadened into DOE, there is only so much management time in any department, and they can only give their time to so many things, and I think the DOE gave a whole new set of problems to the management.

For instance, before, it had been largely a technical agency, and after DOE was organized, you found an increasing amount of time of the Department officials being given the things like: shall we fill the strategic petroleum reserve, and shall we promulgate certain import controls—a lot of things that did not have anything to do with the technical activities of the Department. And I think that diluted in many ways the attention of management on—to my mind—one of their most important jobs, which is making sure this vast and potentially dangerous complex is run safely.

There are probably a lot of other things, maybe just a natural decline, but I cannot quote any specific thing that I think was responsible.

Mr. VALENTINE. All right. Well, that was what I asked you, but were there any specific instances that you could point your finger to?

Were you aware of whether or not DOE has even ever inventoried the number of sites that will be required to clean up—listed them?

Dr. KANE. At the time I wrote my report a year ago, they had not yet completed that inventory. The status today, I don't know; but when my report was written a year ago, that was one of the criticisms. We could not properly prioritize what we were doing because we did not know all of the sites that needed action. That was a year ago.

So the answer to your question is "No," at that time.

Mr. VALENTINE. What do you suggest might be done to ensure a change or correction of the situation that you have found fault with?

Dr. KANE. I guess I would just have to repeat myself and say that the leadership of the Department of Energy has to agree that this is a first-order problem and to give the proper resources to solving it. And by resources, I mean good people and enough money to do their job. It is a matter of prioritization, I truly believe.

I am talking in the general case—when I talk about safety, there are really several kinds of safety. One of them is industrial safety. You can measure that, and we have a pretty good handle on industrial safety in the Department; it is very good. If you compare the industrial safety record of the Department with any industrial firm doing anything comparable—and I told you a few minutes ago there are not many doing things comparable—you will find we

have a very good industrial safety record. That is easy to measure: how many lost-time accidents per year; those kinds of things.

The kind of thing I worry more about is the accident that has a very low probability of happening, but terrible consequences if it does. It is hard to measure how you are doing on those.

Mr. VALENTINE. In your report you make some reference to the fact that there should be some codification of orders. Specifically, can you say what in the current orders gives you cause for concern?

Dr. KANE. The reason that I complained about the orders a year ago was because they seemed to be hung up interminably in being issued. There just weren't any that had been issued. And so I think my recommendations were: Do something; get them out. It was: Issue the recently revised environment and safety and health orders.

Now, I don't know what has happened to those since. I have a feeling they have been issued, but I think you will have to ask some of the members of the Department what the status is.

Mr. VALENTINE. Miss Schneider?

Miss SCHNEIDER. Mr. Chairman, I cannot help but think that it would be awfully helpful if we had some of the later witnesses at the table at the same time, so we could get the answers to these questions all at once.

Mr. VALENTINE. Well, I don't have any problem with that, if the other witnesses who are scheduled to testify, if they can come on up and have a seat. Maybe——

Miss SCHNEIDER. In the name of energy efficiency, I think it might be a good move—time efficiency, too.

Mr. VALENTINE. We want to approach efficiency in this institution.

Miss SCHNEIDER. Well, I would like to follow up on the question that was already posed, and that is: Has DOE established a priority list? Perhaps Ms. Walker, or Dr. Trivelpiece, you could respond to that.

Ms. WALKER. I would be happy to try.

We have inventoried so far as our current information will allow us the number of—and I presume we are talking about hazardous waste sites, both inactive and active under RCRA and CERCLA—and in the case of hazardous waste sites have provided that information to EPA and the States through section 3016 of the Resource Conservation and Recovery Act; that was to have been due January 31, 1986—but we recognize that we may still not have the complete picture, or, in some cases, we have candidate waste sites we have not fully assessed or characterized the particular site involved.

That is one of the issues that the Secretary's initiative of the Environmental Survey is designed to answer very specifically. Over the next 2½ years beginning in June, we will look at every single one of Energy's facilities and assess the current environmental problems and any potential environmental risks and prioritize those for long-range decisionmaking, budgeting, and for really dealing with them.

That is not to say that there are not other things going on or that we are not currently in the process of looking at sites, or that

we do not have priorities now; it is just that we will have a more complete picture once the Survey has been completed.

Miss SCHNEIDER. How many sites do you have on the list at this time?

Ms. WALKER. I would say we believe there are about 600 inactive waste areas and about 300, or a little over 300, hazardous waste management areas; in other words, the ones that are currently active and regulated. And there is at this time a general priority list, but yet it is not substantiated by enough scientific data to make you——

Miss SCHNEIDER. Content over.

Ms. WALKER. Yes. And let me clarify that. Within every one of the eight operations offices, they have an understanding of their environmental problems, and they have priorities. There are also priorities within the various programs, such as defense programs, nuclear energy, and every year through the budgetary process. Environment, Safety and Health, that is, my office, provides an independent prioritization of the environment and safety projects and corrective measures that need to be made. In other words, we put those in the order of priority based on a set of objective criteria for the Secretary and the budget process, so that he knows what we think, in our best judgment, ought to be taken care of first.

Miss SCHNEIDER. What does that judgment include, though? Is there some form of risk assessment——

Ms. WALKER. Yes.

Miss SCHNEIDER [continuing]. Some formula that has been developed?

Ms. WALKER. Yes, and we look at things such as potential for harm to public health and safety offsite, onsite, environmental factors included, and there are about five or six criteria, and there is a committee that looks at them, and it is done objectively and fairly scientifically; and that is done every year.

Again, we believe we need still additional information and to take the information we have and draw it together. The Survey will also include sampling and analysis, so where we have what we believe is a candidate site, we will know better whether, indeed, it is a site we need to be concerned about.

Miss SCHNEIDER. Thank you.

Dr. Kane, there was a GAO report a couple of years ago that said what was really necessary was a complete overhaul, essentially—a complete reorganization that would provide DOE's safety and health organization with two things: basically, authority and independence that would guarantee a very effective program.

I am just curious. This study came out in 1983, and here we are in 1986. Do you have any insight as to why it has taken so long and why DOE has not realized some of the serious problems?

Dr. KANE. No, I don't have any insight into the last half. I agree with you. In preparing this report, I read the two GAO reports you are alluding to. I don't believe I came up with anything new.

Miss SCHNEIDER. Well, let me pass the buck, then, or the question: is there any plan right now for reorganizational proposals that would guarantee greater independence and authority in this office?

Dr. KANE. That was one of my strong recommendations, and I believe, to the credit of the Department, they did do something about that, and let Ms. Walker describe that for you.

Miss SCHNEIDER. OK.

Ms. WALKER. Actually, that is encompassed in the Secretary's initiatives that were announced in September and really have been put in place as of this time. The initial one was the consolidation of the environment, safety and health functions under a new assistant secretary, whose responsibilities would not include things additional to environment, safety and health; so that that individual, now me, could focus entirely on those matters.

In addition, there has been a reorganization of that function, that the Secretary has approved, which includes not only a strengthening in terms of personnel and function, but also, in some cases, new offices, such as the new Office of Environmental Audit and Compliance, which will have the Environmental Survey as well as a field liaison compliance function.

So we have a reorganization with strengthened functions.

We are now integrally involved in the operation of the Department at all levels and more directly overseeing corrective measures to be taken, both with increased contact with field operations and, again, through the Environmental Survey, both on the environmental side as well as the safety side, there will be a hands-on, direct look at the facilities through the Environmental Survey initially, and then through the Technical Safety Appraisals, which have already begun, and, in fact, began in February, with the FFTF facility in Richland, WA.

These efforts will not only give us more information, but will have us out there in the field, looking at the facilities, instead of just looking at management's oversight of that.

We will continue to do that, will continue with our safety appraisals as we have done in the past, but these are by the way of additional measures.

In addition, the Secretary has also, through the promulgation of the Environmental Policy Statement, given the Environment, Safety and Health Office the function of coordinating the environmental issues Department-wide, so that any particular issue that is raised will be coordinated from headquarters so that the Department will have not only a correct policy but a consistent policy in its application through all of its facilities and operations.

Miss SCHNEIDER. I recently had some experience with the Corps of Engineers and the Department of the Interior to investigate as to whether or not a former Navy base had some explosives and hazardous waste materials deposited there, and I must tell you that I was very impressed with the priority list that had been established and the process that they were using.

All too often, people in our position run into the bureaucratic red tape, and I think that perhaps their formula is one that could be retrofitted to your own purposes. It seemed, from my perspective, to be very efficient and quite thorough, also.

Ms. WALKER. My staff is aware of, and in touch with, the other programs around the Government in terms of what they are doing, and feels very comfortable in what we are doing. In some cases, we have aspects of ours that we like even better and may give us addi-

tional information. And what I have said is not to suggest that there have not been priorities ongoing at the Department, or that they do not know a great deal about their environmental and safety problems and have not done a great deal to correct those. This is really to complete the picture.

Miss SCHNEIDER. One final question, Dr. Kane: do you think from what you have heard just now, and from your more recent insight as to what DOE is doing, do you think they are committed now?

Dr. KANE. Yes.

Miss SCHNEIDER. You do?

Dr. KANE. Yes.

Miss SCHNEIDER. OK.

Thank you, Mr. Chairman.

Mr. VALENTINE. Mr. Henry?

Mr. HENRY. Thank you, Mr. Chairman, I think we are all encouraged by what we are hearing. Let me just track a little more. I am curious as to whether, for example, Dr. Kane, you completed your study; you obviously discussed it with the Secretary; and the Secretary obviously has moved to the budget request, funding coming down the line to address this. There has been some reorganization of the Department; the Secretary moved quickly.

Have you and Ms. Walker, for example, been meeting on a regular basis to flush out the proposals from abstractions and to concrete measurable objectives?

Dr. KANE. No, I do not work for the Department any more, and, as I said, I am not a safety expert. I think in many ways I was called in to tell the Department in very concrete terms what they already knew, and I told them very loudly, and they paid attention, which is very gratifying to me, but I have not followed up on it since then.

Ms. WALKER. I might be able to provide you with some assurance. When I first was asked to join the Department as a consultant to the Secretary in June 1985, the report of Dr. Kane had been out for a few months; it had been circulated to all of the field and program offices, and management had been asked to comment on it in detail, and those comments had just come in the first part of June. In addition, the comments were circulated, and there were comments on the comments; so it was thoroughly looked at.

I was given both the report, as well as the comments, and I was given instructions to look at both, to talk to whoever I wanted, and to put together what I felt was a response to whatever was needed, both in terms of reorganization and whatever other initiatives might be appropriate to recommend to the Secretary, in addition to his own personal thoughts in the matter.

And I discussed both the report with Dr. Kane and many other senior-level people at the Department, and, in addition, once the recommendations had been put together, and having the Secretary's own thoughts, I then went back to Dr. Kane and asked him if the program that we were about to undertake really met the spirit of his recommendations, and I think Dr. Kane would agree that, or speak for himself, that we did touch base at that time. And what has happened since then has really been the implementation of those measures agreed to in early September.

So, we have already in place, I believe, the answer to that problem.

Mr. HENRY. In the spirit of the report, and I think that is very important. For example, when Dr. Kane grouped his recommendations under a kind of umbrella grouping of 8 recommendations, and obviously you could break that up into 30, or consolidate it into 3. Depending on how you break it out, you could come back to the same place. But in terms of the recommendations of the Kane report, were there any that you have decided were not appropriate, or ought not to be institutionally addressed?

Ms. WALKER. There were no major recommendations in the report that were not agreed to and adopted and, in fact, to my recollection, now in place in terms of the response to them. There were a few which I believe Dr. Kane would agree were minor recommendations that are still being looked at. For example, he suggested that, ES&H might be given a small research budget.

He suggested that there might be a personnel rotation through either the field or the scientific community into ES&H—much more minor than reorganization, line management responsibility, oversight that strengthened—whatever else he gave, he recommended, that was really what he considered to be the main objectives or the main recommendations have been adopted and put in place. And, again, I don't want to speak for Dr. Kane, but I believe that that is accurate.

Dr. KANE. I agree, completely.

Mr. HENRY. Thank you.

Mr. VALENTINE. Mr. Smith?

Mr. SMITH. I have no questions.

Mr. VALENTINE. All right.

Dr. Kane, thank you very much. Stick around for a while. We might have some other questions.

Mr. KANE. Thank you.

Mr. VALENTINE. We will hear from Ms. Walker this time.

STATEMENT OF MARY L. WALKER, ASSISTANT SECRETARY FOR ENVIRONMENT, SAFETY AND HEALTH, U.S. DEPARTMENT OF ENERGY

Ms. WALKER. Mr. Chairman, and members of the subcommittee.

I am pleased to be here today to discuss with you the Department's budget request for fiscal 1987 for the environment, safety and health program of the Department of Energy.

I have several members of my staff with me, and there are two individuals that I might call upon more frequently, but I did not ask them to sit at the table because, given the line of questioning, it did not appear at this time to be necessary. But, Raymond Berube, Deputy Director of the new Office of Environmental Audit and Compliance, and Geoffrey Judge, Acting Director of the Office of Budget and Administration, are with me, should there be questions going to specific areas.

The fiscal 1987 budget request for environment, safety, and health is $76.1 million, which represents a $29.2 million increase over the fiscal 1986 level. This increase is principally for beginning work on the Environmental Survey, which was one of the Secre-

tary's key initiatives that I mentioned. We are proposing to fund that at the level of $30 million for 1987, and I would be happy to answer any questions you have, either in more detail on the initiatives, or on any other portions of our basic program.

Thank you.

[The prepared statement of Ms. Walker follows:]

STATEMENT OF

MARY L. WALKER

ASSISTANT SECRETARY FOR
ENVIRONMENT, SAFETY AND HEALTH

SUBCOMMITTEE ON NATURAL RESOURCES,
AGRICULTURE RESEARCH AND ENVIRONMENT

COMMITTEE ON SCIENCE AND TECHNOLOGY

U.S. HOUSE OF REPRESENTATIVES

March 6, 1986

Mr. Chairman and Members of the Subcommittee, I am pleased to be here today to discuss with you the Department's budget request for FY 1987 for the Environment, Safety and Health Program. I am accompanied by Raymond Berube, Deputy Director, Office of Environmental Audit and Compliance, and Geoffrey Judge, Acting Director, Office of Budget and Administration.

NATIONAL ENERGY POLICY PLAN AND SAFE, ENVIRONMENTALLY SOUND OPERATION OF DOE ACTIVITIES

The overall goal of our national energy policy is to foster an adequate supply of energy at reasonable costs. The two strategies to achieve this goal are (1) to promote a balanced and mixed energy resource system and (2) to minimize federal control and involvement in energy markets while maintaining public health and safety and environmental quality. In addition, the Department is responsible for the manufacturing of nuclear weapons for national defense purposes. It is the stated policy of the Secretary of Energy to conduct all of the Department's operations in an environmentally safe and sound manner. Protection of the environment and the public are of paramount concern and importance to the Secretary and the Department.

GOAL OF OFFICE OF ENVIRONMENT, SAFETY AND HEALTH

The goal of the Environment, Safety and Health (ES&H) Program is to:

- o assure conformance of the Department's activities with all applicable environmental laws and regulations and assure that the health and safety of workers and the public are protected;
- o assure that national environmental protection goals are incorporated into the formulation and implementation of energy policy and programs;

- o assure that environmental, safety and quality assurance concerns are identified, prioritized and addressed through corrective and remedial actions, and areas of environmental and safety risk are reduced to levels as low as practical;
- o develop policy options for the Department on the effects of National environmental policy and regulations on U.S. energy industries and energy supply and demand; and
- o provide liaison with other federal agencies, such as EPA, concerning regulatory efforts and specific actions of those agencies that may have an impact on DOE operations.

PRINCIPAL STATUTORY AUTHORITY

As its principal basis in law, the Environment, Safety and Health program responds directly to 19 statutory requirements which are listed and briefly summarized in our FY 1987 budget submission.

ENVIRONMENT, SAFETY AND HEALTH RECORD

Among the primary objectives of the ES&H program are the assurance of the safety and health of the public and the quality of the environment, the protection of Government properties against accidental loss and damage, and the assurance of safe and healthful work places and conditions of employment for both DOE and contractor employees at approximately 225 industrial and research sites across the United States involving both nuclear and non-nuclear operations.

The vital interest that the Department places on its safety and health program, and the positive results realized from that program are best

illustrated by comparisons with the private sector. The following is a comparison summary of our FY 1985 safety and health record:

- o DOE's fatality rate of 1.2 deaths per 100,000 worker-years is approximately 10 percent of the private sector 1980-1984 average fatality rate reported by the National Safety Council.
- o DOE's recordable injury/illness rate of 2.2 cases per 200,000 work-hours is 33 percent of the private sector average rate for 1980-1984.
- o DOE's property loss rate of 0.44 cents per $100 property valuation is about 17 percent of the private sector experience rate.
- o DOE's vehicle accident rate of 4.0 accidents per million vehicle miles is about 21 percent of the National Safety Council's five-year statistical average for 1980-84.

Without exception, for each year since its creation, the Department has carried out its operational missions with a safety and health record that is at least two-to-three times better with respect to fatalities, injuries, and illnesses, and more than ten times better with respect to property protection, than that of the private sector.

The increasingly complex and dynamic situation regarding environmental laws and regulations has required us to reevaluate our environmental programs. Some of our facilities have been in use for nearly 40 years and many of the environmental problems we are finding at DOE facilities represent a "legacy of the past," from activities conducted in a different atmosphere and under different standards than are applied for today's more sophisticated and

highly publicized environmental and safety criteria. What was acceptable in 1945 is not acceptable in 1986.

NEW INITIATIVES IN ENVIRONMENT, SAFETY AND HEALTH

On September 18, 1985, Secretary Herrington announced a series of initiatives to strengthen the environment, safety and health function within the Department of Energy. These new initiatives are the result of a thorough review of the Department's environment, safety and health function by ES&H and senior management of the Department.

- o First, oversight responsibility for the environment, safety and health function in the Department has been consolidated and upgraded under the new Assistant Secretary for Environment, Safety and Health. ES&H is now integrally involved in the operation of the Department at all levels, is directly overseeing the environmental and safety aspects of the Department's ongoing operations and necessary corrective actions, and is more integrally involved in decisions affecting those operations.

- o Second, ES&H will conduct a baseline Environmental Survey of all DOE facilities to identify Department-wide existing environmental problems and areas of potential risk and to prioritize corrective action. The onsite Survey activities scheduled to begin in FY 1986 will take about 3 years to complete and will enable the Department to develop long-range planning for correcting environmental problems and reducing potential risks.

- o Third, ES&H will conduct Technical Safety Appraisals of DOE's nuclear facilities to determine compliance with safety requirements, industry lessons learned, and licensed facility requirements. These will be on-

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site technical appraisals of all aspects of safety, including nuclear reactor safety, nuclear process facility safety, health physics, training, emergency preparedness, occupational medicine, occupational safety, fire protection safety, and transportation and packaging safety. The Technical Safety Appraisals, begun in February 1986, will also be completed in about 3 years.

Other elements of the Department's strengthened Environment, Safety and Health program include regular field reporting and a Computer Assisted Tracking System, a more aggressive ES&H role in the development and implementation of environmental and safety policies for the Department, including more detailed Resource Conservation and Recovery Act and Comprehensive Environmental Response, Compensation, and Liability Act (RCRA/CERCLA) policy guidance, enhanced liaison with State and Federal agencies, and coordination of Departmental environmental activities such as compliance with RCRA and CERCLA requirements.

The new initiatives represent the Secretary's personal commitment to a quality environment and to the safety and health of our workers and all Americans. These initiatives assure that the Department has solid information upon which to base its clean-up and corrective actions, and strong oversight to ensure continued safe and environmentally sound operations.

I would like to emphasize that none of the new ES&H initiatives described above are meant in any way to suggest that line management in the Department has a decreased responsibility for safety and environmental matters. Line management has the basic responsibility to conduct its activities in accordance with the Secretary's environment, safety, health and quality assurance policies. The fact that ES&H is being strengthened does not alter this. Rather, these changes will provide line management with greater

technical assistance, more consistent policy, and the Department with more credible oversight and validated success in these areas.

PROGRAM ORGANIZATION

The new Environment, Safety and Health Program consists of six major units: Nuclear Safety, Operational Safety, Quality Assurance, Environmental Audit and Compliance, Environmental Guidance, and Environmental Analysis. Their activities include: the development of policies and standards; oversight, including the Environmental Survey, Technical Safety Appraisals and functional appraisals to monitor program and field performance in complying with DOE safety policies and standards, and in achieving effective safety and quality performance; technical assistance as needed to foster compliance; maintenance of the resources to respond to radiological emergencies; the review of NEPA documents; and the analysis of energy/environmental issues pertaining to the energy supply industry and to energy use arising from environmental legislative and regulatory activities.

FY 1986 PROGRAM PLANS

During FY 1986, we are focusing our activities on implementing the Secretary's new initiatives and upgrading our base program from within existing Departmental resources. The FY 1986 plans for the Environment, Safety and Health program include actions to:

- Implement the Environmental Survey by completing all necessary planning and preparatory activities and initiating the Environmental Survey for the first group of 5 sites.

- Begin the in-depth Technical Safety Appraisals of the safety of operations at Category A reactors (20 megawatts thermal or greater), high hazard nuclear facilities, and selected moderate hazard nuclear facilities to be completed on a three-year cycle.

- Issue revised DOE Safety and Quality Assurance Orders, and review and revise, as appropriate, DOE Environmental Orders.

- Review reactor safety analysis reports and nuclear facility safety analysis reports. These are in-depth multidisciplinary reviews to assure that an adequate degree of protection of the safety, health, and environment has been designed into reactors, high hazard nuclear facilities, and selected moderate hazard nuclear facilities.

- Implement additional modules on the Safety Performance Measurement System for environmental, safety reporting, radiation exposure data, and standards information, and a personnel and resources directory.

- Development of the Nuclear Criticality Safety Information System will continue with the system being expanded to a nuclear safety database which will include human factors and other nuclear safety data.

- Conduct technical evaluations of aviation operating procedures including eight appraisals of DOE aviation operating contractors.

- Develop guidelines on concept and content of a DOE Quality Improvement Program and Operation Readiness Reviews, and on the application and implementation of quality assurance principles and requirements to DOE computer program software and research and development programs.

- Develop environmental standards and provide environmental guidance and compliance assistance to the programs and field offices, and provide oversight of DOE programs, projects, and operations subject to environmental requirements.

- Implement DOE's regulatory review and coordination system to systematically identify, track, analyze, and prepare responses on external environmental, safety and health regulatory activities potentially affecting DOE activities and operations. Significant activities are anticipated with respect to the RCRA and CERCLA Acts.

- Continue to participate in analyses and research related to regional and global environmental issues such as acid rain, climate change, deforestation, and nuclear winter as well as analysis of regulatory and legislative proposals affecting energy elements. Much of this work involves participation in interagency and international meetings.

FY 1987 FUNDING

The FY 1987 budget request for the Environment, Safety and Health Program, is $76.1 million, an increase of $29.2 million above the adjusted appropriation for FY 1986 as noted in the following table. The increase is principally for beginning work on the Environmental Survey. The Environmental Survey is supplementary to the base program for environment, safety and health, and to ongoing environmental projects and corrective actions. Thus, funding for the Environmental Survey will not displace these other efforts.

FUNDING SUMMARY

(Budget Authority in Millions)

Environment, Safety and Health	FY 1986 Adjusted Appropriation	FY 1987 Request	Change
Environmental Audit and Compliance	$ 7.5	$ 34.0	$ +26.5
Nuclear Safety	16.9	17.2	+ 0.3
Operational Safety, Quality Assurance, and Environmental Guidance & Analysis	11.4	11.3	- 0.1
Program Direction	9.7	11.5	+ 1.8
Capital Equipment	1.4	2.1	+ 0.7
Total ES&H	$ 46.9	$ 76.1	$+29.2
Staffing (FTE's)	125 a/	127 a/	+2

a/Excludes 3 FTE's budget under the Nuclear Waste Fund.

FY 1987 PROGRAM PLANS

Environmental Audit and Compliance. This new office has the responsibility for conducting the Environmental Survey, for coordinating the Department's environmental issues review, and for field liaison on compliance issues and agreements. The FY 1987 budget request is $34.0 million, an increase of $26.5 million. During FY 1987, we will conduct the survey of approximately 20 DOE sites, and continue to coordinate Departmental environmental activities such as compliance with RCRA and CERCLA requirements.

Nuclear Safety, $17.2 million, has been increased 2 percent over FY 1986, with significant activity occurring on the new Secretarial initiative, the Technical Safety Appraisals. During 1987, we will perform extensive safety reviews of DOE facilities, including twenty-three Technical Safety Appraisals of Category A reactors and high hazard nonreactor nuclear facilities.

Emphasis will also be placed on the review and concurrence of reactor and nonreactor nuclear facility safety analysis reports covering new facilities or modifications and upgrading of existing facilities. The program will also maintain a viable radiological emergency response capability for DOE facilities utilizing the Atmospheric Response Advisory Capability and the Aerial Measurement System. Emergency response support will be made available to the DOD, and in coordination with the Federal Emergency Management Agency, on request to other federal and state authorities.

The budget request for Operational Safety, Quality Assurance, and Environmental Guidance and Analysis is $11.3 million which is essentially the same amount in FY 1987 as appropriated in FY 1986. Emphasis will be placed on issuing revised environmental protection, safety and health protection policy guidance for Departmental projects and operations, including comprehensive direction on hazardous waste (RCRA/CERCLA) requirements. This includes an aggressive role in developing and coordinating comments on new and revised environmental statutes, rules and policies of other agencies potentially impacting DOE and assuring clear, adequate guidance to our field operations. The base activities of appraising operational safety of the DOE facilities, assisting DOE program and field organizations in their development and implementation of the Quality Improvement Program concept, independently reviewing NEPA and other supporting environmental documents to assure adequate compliance, and participating in Departmental environmental analysis and research including acid rain issues will continue.

The budget request for Program Direction, $[illegible].5 million, represents an 18 percent increase in FY 1987 over FY 1986 to support the increased staff necessary to implement the new Secretarial initiatives of the Environmental Survey and the Technical Safety Appraisals, and associated increased travel and contractual support.

The budget request for Capital Equipment, $2.1 million, is $0.7 million greater in FY 1987 than FY 1986. The increase is principally required to establish and operate the Computer Assisted Tracking System for environmental and safety data to monitor compliance and progress in completion of corrective actions at DOE facilities, and to assist ES&H in the early identification and correction of adverse safety trends and in reducing areas of environmental and safety risk.

SUMMARY

In summary, Mr. Chairman, the Secretary's new initiatives in environment, safety and health underscore the Department's commitment to protecting the environment and giving high priority to public and worker health and safety in our operations. Our FY 1987 budget request will enable us to accomplish our environment, safety and health goals in a responsible manner.

U.S. Department of Energy
Assistant Secretary for
Congressional, Intergovernmental
and Public Affairs
Office of Public Affairs
Washington, D.C. 20585
202/252-5644

BIOGRAPHY

MARY L. WALKER

Mary L. Walker was nominated by the President for the position of Assistant Secretary for Environment, Safety and Health, U. S. Department of Energy (DOE), on September 23, 1985, and confirmed by the Senate in December 1985. In this position, she manages the Department's environmental and safety guidance, compliance and oversight functions. Her responsibilities include oversight of over 260 nuclear facilities and 160 non-nuclear facilities. She also develops the Department's environmental and safety policies and standards and assists the Department's field operations and programs in the areas of new project review, liaison with states and federal agencies, technical expertise and compliance.

From June until December, 1985, Ms. Walker was a special consultant to the Secretary of Energy. Previously, she served as the Deputy Solicitor for the Department of the Interior under William Clark. In this role, she supervised 220 attorneys including eight Regional offices, and provided legal counsel to the Secretary and program heads on the many varied legal issues involving that Department.

In 1982 she was recruited by the Reagan Administration as the chief Deputy Assistant Attorney General in the Land and Natural Resources Division, U.S. Department of Justice. She supervised a staff of 155 persons and managed the federal government's environmental litigation, involving over 2,500 cases relating to the federal government's protection and regulation of land and natural resources.

Ms. Walker was a partner with the Los Angeles law firm of Richards, Watson, Dreyfuss & Gershon, practicing in the areas of land use and environmental law and litigation from 1976-1982. In addition to representing individual and corporate clients, Ms. Walker represented various public entities, including approximately twelve Southern California cities. She handled matters involving federal and state agencies, and is experienced in both federal and state court litigation.

From 1973-1976, Ms. Walker was an attorney with Southern Pacific Transportation Company in San Francisco. She represented Southern Pacific and its diverse subsidiaries, including railroad, pipeline, trucking and land companies, in the then-emerging area of environmental law.

Ms. Walker received her B.A. in biological sciences/ecology from the University of California at Berkeley in 1970. She attended U.C.L.A. Law School and Boston University Law School, receiving her J.D. in 1973.

February 1986

Mr. VALENTINE. Ms. Walker, are you aware of the specific reasons for the Secretary's decision to ask Dr. Kane to undertake his review in the first place?

Ms. WALKER. I have to tell you that I am not outside of a growing or existing concern he had that the function within the Department might not be as strong as it should be. In fact, Dr. Kane's report, itself, states that it was not motivated out of any specific safety concern, any particular hazard, any particular incidence; so, I have to go with what the report, itself, said. I have not had any conversations that would suggest otherwise.

Mr. VALENTINE. Based on your observations, would you agree with Dr. Kane's assessment that ES&H, that the program, was widely perceived as having no clout and was routinely ignored by senior management?

Ms. WALKER. I have to tell you candidly that I was not there at the time those observations were made. When I joined the Department, I would say the function was considerably less strong than it is today. It was fragmented, many responsibilities were in the programs that are now centralized; it did not speak with the voice that it had; and top management had not given it the level of prominence that it has today.

But I could not tell you if it was widely ignored, or if it was held widely in a low view. I really was not there to perceive those things, myself. I just know that things have changed for the better.

Mr. VALENTINE. Do you disagree with any of Dr. Kane's observations concerning this matter?

Ms. WALKER. Again, many of his observations I took as fact, though I had no personal knowledge of them myself. I did not disagree with him; I just accepted them, because they were in the report, and I was aware of the quality of the individual doing the report. In addition, the comments coming back from the report from the field and the program offices were basically very supportive of his recommendations and in other instances echoed or mirrored his comments; so I take them to be generally accepted, yes, although people might differ as to the strength of them. But everybody wanted the functions strengthened, and that was pretty thoroughly agreed to.

Mr. VALENTINE. I understand that a formal statement of DOE internal environmental safety policy is defined in a series of orders, and I want to ask you if you could tell us when these orders were implemented.

Ms. WALKER. I believe Dr. Kane was referring to a statement of environmental policy that was issued in January by the Secretary, which, to my knowledge, is the first time that has ever been done at the Department of Energy, but is quite common to corporations that have leading roles in the environmental area.

We are also undertaking to—sometime in the near future—put out a mirrored safety policy. The orders are specific guidance and rules, if you will, for implementing the program at the Department. Those orders had been revised, I guess it was sometime in the spring or at least by the time I got there in June 1985 at the Department, but those orders even as revised, and, again, revised to strengthen the function, did not reflect the Secretary's new initiatives and were not as strong as they should have been.

I was given the task to oversee further revisions to the orders to increase the function within the Department and to reflect the Secretary's new initiatives. Those revisions have been made; the orders have been corrected to reflect them; and they have been recently sent out for short-term review by the field organizations and the program offices of the Department; and we hope to have them in place by the beginning of next month; that is to say, final. They are already out.

Mr. VALENTINE. Miss Schneider?

[No response.]

Mr. VALENTINE. Mr. Congressman? Harry Reid.

Mr. REID. Thank you very much, Mr. Chairman.

Last year, we talked about the liquefied gas spill test facility at the Nevada test site. Do you know anything about that?

Ms. WALKER. I am sorry, Congressman. I do not believe that is in my program. If it was before, it is not now. Fossil Energy, I am told, has that program.

Mr. REID. OK.

It is my understanding that Dr. Dietz is in the audience and can answer some questions in that regard. Is that right? Could you come forward, please?

Basically, I am wondering what is happening at that facility out at the Nevada test site.

Dr. DIETZ. Congressman, currently we are very close to construction completion, which is due—is imminent later on this month of March or early April. At that time, we will begin our shakedown, which is scheduled to last around 40 to 45 working days, which puts us into the May timeframe, and, at that time, we are planning to start the testing for the Gas Research Institute. We have signed an agreement with them. Mr. Bauer, our Acting Assistant Secretary, has just entered into an agreement with the Gas Research Institute to conduct some testing for them along with the Department of Transportation.

These tests are scheduled to—the actual spilling of the liquefied gas is scheduled for the latter part of June, early July. Afterwards, if weather permits and planning continues on schedule, we hope to have the Amoco Oil Corp. there the latter part of July into August.

Mr. REID. Dr. Dietz, I wonder, without taking more time of the committee here, would you be kind enough to send to my office a brief statement along the lines you have just given me, together with how many people will be involved in those projects.

Dr. DIETZ. Sure will.

Mr. REID. Just rough numbers; just for my own personal knowledge.

Dr. DIETZ. Yes.

[Material follows:]

LIQUEFIED GASEOUS FUELS SPILL TEST FACILITY

The Statement for the Record which follows provides the near-term plans (CY 1986) for the Liquefied Gaseous Fuels Spill Test Facility (LGFSTF), namely, those tests to be sponsored by the Gas Research Institute (GRI) and the Amoco Oil Corporation. The planned tests will be managed and conducted by the Department of Energy (DOE); on-site test activities, i.e., test set-up, take down, etc., will be accomplished mainly with the assistance of the DOE, Nevada Test Site, contractor personnel (EG&G and REECo). These support personnel will be matrixed as necessary to

satisfy individual test scenario requirements, and will vary in size as dictated by the complexity of the planned experimental program(s).

Mr. REID. And also, do you know of any other nonnuclear uses of the test site that are being planned?

Dr. DIETZ. Not to my knowledge, no, sir.

Mr. REID. OK.

Those are the basic questions I had, Mr. Chairman. Thank you.

Mr. VALENTINE. Mr. Henry?

Mr. HENRY. Thank you, Mr. Chairman.

One very brief question that comes to mind: When everything seems to be working altogether too well in terms of implementing the report and constructive spirit, which is all well and good, but in the end, when push comes to shove, we will face the dilemma that Dr. Kane presented to us that the pressure for doing rather than the concern of doing safely come into conflict.

Obviously, there is the esprit de corps of the renewed sense of mission and purpose of the program which we administer within the Department. Have you come to the point yet of having any programmatic conflict with other aspects of the agency or are you under pressure to perform—period?

Ms. WALKER. We make tough decisions every day at the Department of Energy, and many of them involve environmental or safety considerations. I believe there are safeguards in place, however, that will alleviate your fears. For example, the Assistant Secretary for Environment, Safety and Health has to concur in new projects in the completeness of the environmental analysis for new projects we are undertaking.

In addition to that, because we do have commitment at the top, decisions that raise any kind of environmental or safety issue do not get made without the involvement of my office and without us feeling good about what is being done. Even in terms of the budget process, we are allowed an independent voice at the table, so that the Secretary or the Under Secretary will have the benefit of our thoughts in terms of what should be done.

We work closely at a staff level, at the decisionmaking level, but even before the decisionmaking level, to make sure that the environment and safety is being considered.

In addition, you have operations managers that are very serious about this, and my staff works closely with them, and I have been out and talked to them personally, and I know their line management takes into account environment and safety now the way I am sure it did not occur in the long-distant past.

And so you have people at all levels, not just in Environment, Safety and Health, but really in line management, that care and are educated in this area and are really striving to do better. But, as I indicated, there are safeguards that really mean they cannot go forward with a programmatic decision if it raises an environmental or safety issue without us being——

Mr. HENRY. Did I hear you correctly? Did you say your office actually has the ability, then, to veto a project's start, until it meets your requirements?

Ms. WALKER. Yes. In terms of the major starts of reactors, most of the major decisions, that is right. There may be some minor de-

cisions that are made that we don't have concurrence authority over, but the new orders do set forth our concurrence authority.

Mr. HENRY. What about a project continuation? Do you have an opportunity to interrupt, unless you are overridden by the Secretary, himself?

Ms. WALKER. We have authority to recommend slowdown or shutdown if we believe there is an environmental or safety risk. It is always up to the Secretary to make the decision as to whether or not something goes forward or does not go forward, or the Under Secretary in many cases. But we can make that recommendation. We have that voice.

Mr. HENRY. And unless the recommendation is overridden, it would be? Or simply a recommendation. I am just——

Ms. WALKER. Well, I don't want to get over my head here in terms of how the process will work, because it has not yet happened to me, but, as I understand it, there are some decisions, such as the major restart of a reactor, where we have to concur or it does not go forward.

There are other instances where we may recommend, let's say a shutdown or a slowdown, and if we believe there is some environment and safety risk, and if the program manager did not agree, that would go up, then, to the Under Secretary, or the Secretary, who would then make the final decision.

It is not my decision to make, but I am there at the table.

Mr. HENRY. But a conflict between your office and the program manager goes further up——

Ms. WALKER. Exactly.

Mr. HENRY [continuing]. For resolution rather than——

Ms. WALKER. Exactly.

Mr. HENRY. Thank you.

Mr. VALENTINE. Mr. Smith?

Mr. SMITH. Just a quick question, Ms. Walker.

Because your agency does involve itself in environmental safety and then the compliance for that, does the Gramm-Rudman proposal, where you are going to take a whack probably across-the-board there in this area, could you relate some concerns that you have there? This is not your typical budgetary area where you can cut out—well, you might want to cut out some particular project, but this is the overseeing of health and safety in the environmental area and the energy area, so I would be interested in whether or not you feel that is going to hurt you or, if so, where.

Ms. WALKER. Well, to put on my speculation hat, I would say that, assuming a cut across the board, what it would do would perhaps be to stretch, in some cases, our schedules, or appraisals, or the Environmental Survey. Some of the sites might be reviewed at a somewhat slower pace, but the Secretary has assured us that these functions will be accomplished, and in terms of our base environment and safety oversight, that will not be impaired. We will be able to move forward with that.

But, obviously, in terms of some of our major new initiatives, the schedules might be stretched somewhat.

Mr. SMITH. Schedules stretched, but not—you don't feel any safety, environmental safety would be affected? Obviously, it is affected, but I mean not in a damaging way.

Ms. WALKER. That is correct. I do not believe it would be.

Mr. SMITH. By stretching it out.

Ms. WALKER. Right. That is correct.

Mr. SMITH. Thank you, Mr. Chairman.

Mr. VALENTINE. Thank you, ma'am. If you would stick around for a little while, please.

Let me ask Dr. Kane one more question.

Doctor, in your report, I believe that you recommended that the Secretary designate a Department environment and safety officer, but they did not do that. Do you know why?

Dr. KANE. No. I think they agreed with me. As you read my report, you notice the reason for that is that this is a highly professional business, and, as you know, the average Presidential appointee—pardon me—17 months in Washington, and I use the analogy in my report: would the NRC be happy with a utility running nuclear reactors who had a new safety officer every 17 months. And my conclusion was probably not.

So I recommend that there be some effort to make permanent a kind of a—create a permanent position of a highly professional person that knew the business—I guess that is redundant—that would give some continuity to the job. Now, my recommendation is a safety officer. I think that the Department of Energy has other ways they could do it, and maybe Ms. Walker would like to tell you how they think they have accomplished the spirit of my recommendation without actually following it literally.

Is that fair enough?

Ms. WALKER. Would you like me to address myself to that, Mr. Chairman?

Mr. VALENTINE. Please. Let me say, also, that 17 months is just an average. [Laughter.]

Those might be shorter or longer.

Ms. WALKER. I believe the Secretary has met not only the spirit but really the substance of Dr. Kane's recommendation.

First of all, he elevated the function, itself, to the level of an Assistant Secretary, and in so doing, while perhaps the person might not stay in office as long as a career person, he gave the office, itself, more clout and a closer proximity to himself.

In addition, in the reorganization, one of the two deputies—in fact, the safety deputy—is designated as a career position. So, you will have the continuity that Dr. Kane wanted for the organization at a very high level.

The environment deputy could be career, may be career, but could be either political or career, and the remainder of the organization is career.

You have a continuity; you have a longevity, if you will, of expertise within the Department. It may end up that the only substantive person in the office of management that is political is the assistant secretary. So, I think we have really met the spirit.

Mr. VALENTINE. Would this person have independent access to the Secretary's office, as was recommended?

Ms. WALKER. No. The Assistant Secretary has that independent access. Before, you had an Assistant Secretary with varied responsibilities, and the environment and safety person reported to him. Now, you have an Assistant Secretary who has no other responsi-

bility but environment, safety and health, who does have access to the Secretary.

The career safety deputy obviously in the Assistant Secretary's absence would have that access. There is no question about that, but it is not felt to be necessary in light of the fact that you have an Assistant Secretary devoted to those duties.

Mr. VALENTINE. Thank you, ma'am.

In light of these questions, do you, Claudine, have anything else?

Mr. SMITH. Mr. Chairman.

Mr. VALENTINE. Mr. Smith.

Mr. SMITH. I am sorry I came in late, and if this was addressed, Dr. Kane, just tell me.

The quote that "in 1985 the most pressing problem I have found in the Department's treatment of safety and environmental matters is that they have been almost completely neglected by top management."

To me, that is a devastating statement, and we are 1 year from that statement having been made, or at least your observation. Hopefully, you would back off a little bit from that now and say we have improved, or not.

Dr. KANE. I would say improved greatly in that respect; yes. I think the comment—sometimes an outsider has to raise his voice to get attention, and perhaps I overstated my case a little bit. But I think it had been neglected; I think that every action I have seen since shows the period of neglect is over, and now it is up to people here, plus you people there, to make sure the neglect is not continued, because the safety problem will be here years from now. It never goes away, unfortunately.

But yes, I should be more brief. I think in a year a lot has happened.

Mr. SMITH. Thank you.

Mr. VALENTINE. Thank you very much.

Now, Dr. Trivelpiece, if you would come up so we can have at you for a while.

We are glad to have you here, sir, and your report will be a part of the record, and you can summarize that or proceed in any way you deem appropriate. We are glad to have you.

STATEMENT OF ALVIN W. TRIVELPIECE, DIRECTOR OF ENERGY RESEARCH, U.S. DEPARTMENT OF ENERGY, ACCOMPANIED BY CHARLES DE LISI, ASSOCIATE DIRECTOR, OFFICE OF HEALTH AND ENVIRONMENTAL RESEARCH

Dr. TRIVELPIECE. Thank you, Mr. Chairman.

I wonder if I might invite my new Associate Director for the Office of Health and Environmental Research to join me here. I would like to introduce him to the committee.

Mr. VALENTINE. Certainly.

Dr. TRIVELPIECE. This is Dr. Charles DeLisi. He has been with us since last September. He is a well-published scientist in his own right and worked for NCI from 1974, and prior to that time worked at the Los Alamos Laboratory and did research in the area of biology and the physics related to biology.

The program, as you stated at the outset, has a budget request of $196 million this year. That is up $16 million from the Gramm-Rudman base. On the other hand, that $16 million is merely about what it takes to remain even, but, even so, I would like to point out that that is a remarkable level of support for the Department in this Gramm-Rudman climate to maintain the functions at about the same level. That reflects a strong support for the activity even in periods of budgetary stress.

This program plays a very important role. It has provided over the years the knowledge base to understand how to handle nuclear materials in a safe manner and what the risks are associated with handling them, as well as the benefits that have accrued through nuclear medicine and improved understanding of certain chemical hazards. Most things that happen in energy-producing systems end up coming out of the ground and going into the atmosphere and going back into the ground, or into the water, and occasionally they go into people, and so it is important to know where they go, how they get there, what they do, what can be done about it, and things related to that.

The program, I believe, is very important, and, as Congresswoman Schneider said, it is a unique function in the Government, and we are very pleased with it.

With that, Mr. Chairman, I would be prepared to answer any questions.

[The prepared statement of Dr. Trivelpiece follows:]

Statement of Alvin W. Trivelpiece

Director of Energy Research

Department of Energy

before the

Subcomittee on Natural Resources,
Agriculture Research and Environment

of the

House Science and Technology Committee

March 6, 1986

Mr. Chairman and Members of the Subcommittee:

I am pleased to be here today to discuss the FY 1987 budget request for the Biological and Environmental Research (BER) program. The BER program has two main goals: (1) to develop the knowledge base and scientific principles necessary to identify, understand and anticipate the long-term health and environmental consequences of energy use and development; and (2) to utilize the Department's unique scientific and technological capabilities to address major scientific problems in medicine and biology. The FY 1987 budget request will support a program of fundamental and applied research of the highest quality that aims at these goals, and that, at the same time, will continue to contribute to the Nation's economic growth and well-being.

The principal strategy for meeting the first goal has been the development of a long-term research program that is quantitative and mechanistic in its level of understanding, and comprehensive and multidisciplinary in its scope. The need for a strategy with these particular elements is tightly coupled to the mission of the Department. Long-range, quantitative research is dictated by the requirement for broadly generalizable knowledge from which predictive principles can be formulated. Predictive principles permit assessment of energy strategies before they are adopted. They contribute to the health of the Nation by providing the ability to avoid unacceptable impacts prior to, rather than subsequent to, their occurrence; they strengthen the economy by giving us the means to avert major economic stress associated with abrupt discontinuities in energy programs; and they allow us to optimize approaches to mitigating past mistakes. In short, predictive principles provide the basis for rational planning and allocation of resources, and for minimizing adverse health and environmental impacts on future generations as well as on our own.

The comprehensive and multidisciplinary nature of the BER program is unique to the Nation, and arises as a natural consequence of the mission and capabilities of the Department of Energy. Predicting the health impacts of current or anticipated energy strategies requires understanding the health effects of the products of these strategies. But it also requires an understanding of the physics and chemistry of transport and transformation of energy byproducts in terrestrial, marine and atmospheric environments, as they move from source to receptor. A comprehensive approach to the problem clearly requires the type of interdisciplinary strength and coordinated effort for which the National laboratories are so well known. In the case of the environmental research program, these intellectual strengths are complemented by extraordinary field-study capabilities offered by the National Environmental Research Parks.

Because of the unusual characteristics of the BER program and the unique strengths which the Department can bring to bear on major life science problems, the program has spawned scientific and technological discoveries whose implications have far exceeded original programmatic goals. The wide-ranging implications of these accomplishments can be conveyed by a few brief examples.

Basic research, sponsored by the health effects program, aimed at understanding the mechanisms by which radiation interacts with, and damages, biological molecules led to the discovery of repair enzymes. Subsequent research has provided major insights into the genetic determinants of susceptibility and resistance to disease in general, and in particular, it has led to the discovery that certain types of cancer are strongly associated with repair enzyme deficiencies.

Similarly, the program in atmospheric physics and chemistry, which began in the early 1950's in response to a need for understanding the movement of radionuclides through the atmosphere, has turned out to be central to approaching problems such as acid rain, and to understanding the causes and effects of changes in the atmospheric concentration of carbon dioxide and other "greenhouse molecules".

Finally, in the area of measurement science, the cell sorter was originally developed to separate radiation damaged cells from normal cells. Today it is routinely used for performing complete blood counts, for detecting cancer and monitoring its treatment, and for detecting genetic abnormalities. More recent improvements have permitted the development of a chromosome-specific DNA library which is expected to have a major impact on the field of human genetics. Since flow cytometry is now a standard analytical technique in cell biology, its full impact is difficult to summarize, but many scientists consider it perhaps the single most important analytical advance in the history of cell biology.

The scientific and economic implications of these contributions and many others like them have been analyzed recently and will be available for distribution in mid-1986; our best estimates indicate that on the basis of economic impact alone, the public's investment in the BER program and the programs that preceded it has been returned manyfold.

The second goal of the BER program (i.e., to utilize the Department's unique scientific and technological capabilities to address major scientific problems in medicine and biology) had its origin in the 1947 mandate from Congress to utilize advances in nuclear science for the treatment of human disease. At the time the mandate was written, even the most farsighted

scientists and legislators would have had difficulty predicting the enormous contributions that the large multiuser facilities and their associated intellectual and advanced technological capabilities could bring to a wide range of problems, not just in medicine, but in basic biology as well. The significance of the latter is embodied in the burgeoning of biotechnology. As I will indicate below, the intellectual tools and resources for research breakthroughs needed by the private sector for applications in the coming decades, exist today, in their most powerful configuration, in the National laboratories.

Historically, the focus of this research has been on nuclear medicine -- the development and application of non-invasive imaging techniques, the production of isotopes for the study of metabolic and other kinetic processes, and the production of radiopharmaceuticals for the treatment of cancer and other diseases. These advances have cured or alleviated the sufferings of tens of millions of people throughout the world, and have spawned industries with markets valued at hundreds of millions of dollars per year. More recently, another non-invasive imaging technique, non-nuclear in nature, has been developed. This method, called magnetoencephalography, measures changes in magnetic fields generated by the firing of neurons, and offers great promise for major progress in our understanding of neurological processes. In the future, the scope of this research endeavor will broaden considerably, to take full advantage of the unique capabilities of the Department's laboratories for helping to solve the Nation's major medical and biological problems.

Fiscal Year 1987 Biological and Environmental Research Budget Request

The FY 1987 budget request for the BER program is $196.6 million. Within

this request, $184.6 million is for Operating Expenses; $8.5 million is for Capital Equipment, and $3.5 million is for Construction (Table 1). Funding by research area is shown in Table 2.

In order to meet its first goal (i.e., to develop the knowledge base and scientific principles necessary to identify, understand and anticipate the long-term health and environmental consequences of energy use and development), the BER program supports four major research areas. These areas are: Source and Dose Determination; Environmental Processes and Effects; Health Effects; and General Life Sciences.

The Source and Dose Determination research program, with an FY 1987 Operating Expenses request of $16.6 million, develops methods and procedures for qualitative and quantitative characterization of radiation and toxic chemicals to which human or ecological populations are exposed. This is the initial step necessary in estimating consequent health effects. Analytical studies are pursued to define the chemical and physical nature of the source. Dosimetry research aims at improving methods for the direct determination of human exposure.

Research in measurement science develops the advanced instrumentation required to pursue effectively the broad scope of the health and environmental effects research program. Progress on many of the problems that must be solved for assessing health and environmental impacts is heavily dependent on advances in measurement science for precise monitoring and diagnosis. The development of new techniques such as remote fiber fluorimetry permit the possibility for chemical monitoring in hostile or inaccessible environments. This particular method is expected to be applicable to problems ranging from in vivo measurements to assessments of

Table 1
Biological and Environmental Research
Budget Authority
($ in millions)

	FY 1985 Conf. Approp.	FY 1986 Conf. Approp.	FY 1986 Adjusted	FY 1987 Request
Operating Expenses	$177.9	$176.0	$169.4	$184.6
Capital Equipment	7.1	7.8	7.4	8.5
Construction	2.7	3.2	3.1	3.5
Total	$187.7	$187.0	$179.9	$196.6

Table 2
Biological and Environmental Research
Budget Authority
($ in millions)

	FY 1985 Conf. Approp.	FY 1986 Conf. Approp.	FY 1986 Adjusted	FY 1987 Request
Late Effects on Health & Environment of Energy Development and Use				
Source and Dose Determination	$ 15.6	$ 15.3	$ 14.8	$ 16.6
Environmental Processes & Effects	32.4	31.1	29.9	32.9
Health Effects	63.4	59.9	57.7	65.9
General Life Sciences	28.5	29.1	28.0	29.9
Nuclear Medicine	21.3	24.2	23.3	22.1
Carbon Dioxide Research	13.1	13.1	12.6	13.6
Program Direction	3.5	3.3	3.1	3.6
Facility Operations	9.9	11.0	10.5	12.0
Total	$187.7	$187.0	$179.9	$196.6

ground water contamination. Another method under development, fluorescence line narrowing spectroscopy (FLNS), can distinguish isomers of polycyclic aromatic hydrocarbons. The significance of this is that structurally identical isomers that bind to DNA differ considerably in their carcinogenic activity. FLNS is sensitive enough to detect one such molecule in 100 million DNA bases. Further developments in this and similar methodologies will permit the identification of individuals that have been exposed to potential carcinogenic substances, well before irreversible cell transformation occurs. Continued developments in measurement science are expected to yield methods that permit measurements of previously undetectable concentrations of harmful molecules, or of in vivo markers signalling disease onset well in advance of clinical symptoms.

Taking advantage of the data and insights generated by the Source and Dose Determination activity, the Environmental Processes and Effects research area, with a FY 1987 budget request of $32.9 million in Operating Expenses, focuses on the pathways and mechanisms by which energy-related substances move through the environment, and on the ways that the environment itself may be affected by such substances.

The main atmospheric research programs are PRECP (Processing of Emissions by Clouds and Precipitation) and ASCOT (Atmospheric Studies in Complex Terrain). The goal of the first program is to develop a quantitative understanding of the physical and chemical processes responsible for the incorporation and transformation ("processing") of atmospheric pollutants into clouds and storms, and for the removal of those pollutants by precipitation. ASCOT aims at the improvement of fundamental knowledge concerning the processes that are responsible for the dispersion of atmospheric pollutants over complex (e.g., mountainous) terrain.

The PRECP program has completed three large field experiments investigating the removal of pollutants by precipitation by some typical storm types. The information gathered from surface and aircraft measurements in these storms, together with laboratory simulations and diagnostic modeling, have validated hypotheses which are central to national concerns such as the understanding and control of "acid rain".

In ASCOT, three-dimensional models have been developed of the turbulent flows over western mountain-valley systems, which have been tested in seven field campaigns in four states. These and other models developed in this program are directly applicable to emergency response planning and other Departmental concerns.

Research conducted in the marine program on cycling and movement of energy materials off our coasts is providing crucial information for decisions on appropriateness for ocean disposal of atmospheric and terrestrial energy discharges. Since substances move from disposal sites to distant locations, knowledge of where they migrate to and their rates of migration are crucial to making informed choices for disposal sites.

In the terrestrial system, prediction of the distribution and fate of energy-related molecules such as hydrocarbons requires an understanding of the chemical and physical processes that control and affect the transport of chemical compounds in the subsurface environment. A number of new techniques and methods are being developed which will enable us to predict the movement of materials in ground water and their potential infiltration into aquifers used to provide water for human consumption. Since movement depends on soil properties, principles and techniques, along with knowledge

of soil characteristics at different DOE sites, will enable us to establish a rational scientifically based set of priorities for cleanup.

Energy production and development can affect water use and produce varying degrees of landscape disturbance. Prediction and mitigation of these impacts can be successful only if basic processes affecting ecosystem functioning are well understood. Past research conducted under this program has elucidated the sulfur cycle in forested ecosystems and is now providing crucial information on acid rain. Information on carbon cycling developed with support of this program is now a central part of the evaluation of CO_2 buildup.

Research in physiologic ecology includes studies on a basic understanding of the mechanisms of stress and tolerance in marine organisms exposed to contaminants. Our research has shown that in response to heavy metal contaminants, animals synthesize specific proteins (metallothioneins) which bind and sequester metals in the animal, thus, decreasing metal mobility and effects. Companion studies with host-specific intracellular pathogens are being used to investigate the effects of heavy metals on the synthesis of immune proteins which mitigate disease processes. The results of these studies are being used to predict the ecological effects of energy-related contaminants on valued marine species.

The FY 1987 Operating Expenses request for the Health Effects research area is $65.9 million. Recent information indicates that the potential exposures to radon gas and its daughter products in residential structures, and the number of people so exposed, may be substantial. The formulation of a rational strategy for the abatement of the risk, requires the entire spectrum of activities sponsored by the BER program. Thus, fully addressing

the issue of radon health effects will not only require the development and testing of models of radon transport through the environment, but also carefully controlled epidemiological studies and fundamental studies of the mechanisms by which radon produces injury.

The epidemiologic research program comprises studies that provide needed scientific data and, at the same time, provide information of important practical significance. These studies include investigations of human populations with occupational or environmental exposure to energy-related pollutants. Among the major populations which have been under study for several years are DOE Workers/DOE contractor workers, Japanese atomic-bomb survivors, nuclear shipyard workers, and New Mexico uranium miners. These population studies will be supplemented by studies of lung cancer cases in communities located near DOE facilities.

During FY 1987, the results of the nuclear shipyard study will come available. These results will greatly refine our confidence in low-level radiation risk estimates which have been developed through extrapolation from populations exposed at high doses and dose rates. The intensive effort to characterize the industrial hygiene aspects of these facilities in order to identify chemical hazards which may be responsible for some apparently deleterious health effects that have been discovered in previous epidemiologic investigations will continue.

The experimental health effects research program uses laboratory-based studies and a multispecies approach to make predictive correlations between cellular/molecular events and whole animal responses, and between laboratory animals and humans. The discovery that DNA damaged by radiation and chemical could be repaired was a landmark achievement. High priority will

be given to the molecular biology of the enzymes that repair damaged DNA and to the genes that control these enzymes. More generally, increased emphasis will be placed on molecular epidemiology including identification of molecular markers for susceptibility and resistance to chemical and radiation damage. Studies will also be made to identify populations that may be especially susceptible to energy byproducts so their needs and concerns can be met early. Research on cancer-related genes, oncogenes, that are activated by radiation and other energy-related materials, will be expanded, and relations will be sought to link them to current DOE-supported epidemiologic studies of cancer in human and animal populations.

The majority of exposures of people to hazardous material is not to single materials but to complex mixtures of chemicals and perhaps even to radiation and chemicals together. Studies of complex mixtures show that their health effects cannot always be predicted by adding the effects of isolated components. To understand this problem a complex mixture program has been initiated to develop predictive principles of toxicity and mutagenicity.

Another major problem is to determine the extent to which radiation and chemical damage to genetic material is transmitted to future generations. This problem is of extraordinary importance since it bears directly on the question of whether decisions made today will effect the burden of disease of future generations. To develop a basis for answering these questions, new molecular approaches will be developed for studying the hereditibility of certain types of molecular, chromosomal and genomic damage.

Research in General Life Sciences, for which $29.9 million in Operating Expenses is requested in FY 1987, provides the fundamental basis of the entire BER program. This research extends our base of biological

information and develops concepts to allow the fullest understanding of the health effects of various energy options.

Research in cell biology will be supported to understand the normal processes of cells, their functions and their regulation. An important problem is to understand the factors influencing cell stability and malignant transformation.

Research in molecular biology will focus on the structure and function of the gene at the molecular and chromosomal levels, the arrangement of genes in chromosomes, and how this arrangement affects the way genes are expressed and regulated.

Studies in structural biology will use the special facilities developed by the Department for the analysis of macromolecular structure. Use of the intense neutron beams produced by nuclear reactors and accelerators and the synchrotron light produced by its electron storage rings will permit information to be obtained faster and under more realistic conditions than was previously possible. These experimental capabilities, the Department's powerful computer network, and its unique breadth and depth in the mathematical sciences will lead to new and far more rapid approaches to determining and predicting molecular structure. Progress in this area will have a major impact on the future of biotechnology including protein engineering, and drug and vaccine design.

The second major goal of the BER program is the utilization of the Department's unique scientific and technological capabilities to address major problems in medicine and biology. The development of applications in the field of nuclear medicine has historically been the major program associated with this goal.

The budget request for the FY 1987 Nuclear Medicine Applications program is $22.1 million. Its objective is to continue the development of new nuclear medicine procedures through the production of new radionuclides, the radiolabeling of new biologically active agents, and advancements in instrumentation. Efforts to develop other medical applications using reactors, accelerators and other related nuclear technologies for the treatment of cancer will be maintained.

Recent developments in the BER nuclear medicine program have produced new radiopharmaceuticals labeled with short-lived radionuclides. In syntheses involving the most important positron emitting radionuclides (oxygen-15, 2 minute half life; nitrogen-13 10 minute half life, carbon-11, 20 minute half life, and fluorine-18, 110 minute half life), one cannot use standard techniques. Rather, innovative rapid organo- and biosynthetic techniques must be developed using the technologies or molecular biology, biochemistry. organic chemistry, hot atom chemistry and radiochemistry.

The new short-lived radionuclide labeled radiopharmaceuticals are proving to be useful in studies of the metabolic functions of the brain and heart. Major advances have been made to date in quantitating hysiology and pathophysiology in the human brain and heart utilizing Positron Emission Tomography. Continued development of advanced tomographic systems will have immediate medical implications in evaluation of stroke patients and diagnosis of degenerative brain disorders such as Alzheimer's, Huntington's and Parkinson's disease.

In FY 1987, research and development will be maintained and devoted to identifying and optimizing techniques for attaching radionuclides to monoclonal antibodies. These homogeneous populations of molecules recognize characteristics which are peculiar to cancer cells. They, therefore, offer the potential for early detection of cancer, for following the response of patients to treatment, and for general cancer therapy. A substantial research and development effort will be required to perfect and evaluate techniques for using labeled monoclonal antibodies. It is anticipated that by FY 1987 work on monoclonal antibodies for cancer therapy will have progressed to the point that one or more of these agents will have been identified as having sufficient potential for clinical trials. In addition, the monoclonal antibody work will be extended to labeling with radionuclides suitable for positron tomographic diagnostic imaging.

The use of magnetic resonance imaging (MRI) spectroscopy to detect carbon-13 and nitrogen-15 labeled metabolic products within intact tissues and cells holds exceptional promise in providing new insight into the mechanisms responsible for metabolic regulation. Because of the great importance of heart disease, current research efforts are focused on the identification of the metabolic effects in the perfused heart model of several proposed therapeutic strategies for treatment of ischemic heart disease. Efforts will be concentrated on obtaining quantitative measurements of metabolic concentrations in the heart.

The Carbon Dioxide Research FY 1987 Operating Request is $13.6 million. Its goal is to develop a sound, quantitative atmospheric carbon dioxide knowledge base to aid in energy policy decision making. It is the position of the Department of Energy that we do not yet have the scientific data base

needed to recommend specific, firm energy policy options for consideration of the Congress relating to CO_2 potential impacts.

Based on projections of potential global impacts, we believe we have the time in which to conduct the research necessary to improve estimates of future atmospheric CO_2 which will include better estimates of energy usage and the workings of the carbon cycle, and improve climate modeling to develop regional and seasonal climate estimates as a function of future atmospheric CO_2. These are prime research directions. Because oceans play a major role in the exchange of carbon dioxide with the atmosphere and as a heat engine in relation to global climatic conditions, much more data, analysis and modeling of oceans is required to be able to develop climate and carbon cycle models with which to predict effects of elevated increased atmospheric CO_2 levels. Although improved understanding of the direct effect of elevated CO_2 on crops is beginning to emerge, it is necessary to design experimental methods to determine the first principles which integrate crops, weeds and insects so that an ecological systems model can be developed. Collaborative international research is a necessity if CO_2 research is to be successful, and, to this end, we are working with many international groups and individuals (e.g., PRC, Australia, Switzerland, Canada).

In FY 1986, State-of-the-Art Reports were published on four major components of the Carbon Dioxide Research Program which indicate what we know or do not know, and which identify the key uncertainties in our knowledge and recommend research activities. We intend to vigorously pursue the recommendations of these definitive statements to reduce the current uncertainties in the scientific knowledge base to a level required for effective decision making.

The FY 1987 budget request for Facility Operations is $12.0 million. These funds provide for the necessary capital equipment and general plant project needs to support the BER program and its Pacific Northwest Laboratory landlord responsibilities.

The Capital Equipment request of $8.5 million for FY 1987 is essential for acquiring state-of-the-art equipment, replacement of deterioriated and obsolete instrumentation, and general purpose equipment needs at the Pacific Northwest Laboratory.

The Construction request for FY 1987 is $3.5 million. The request supports the program's General Plant Project needs, and the Pacific Northwest Laboratory landlord responsibility. General plant projects are necessary to accommodate continuing requirements to maintain satisfactory and economic operating conditions, to meet regulatory requirements and to provide for new program developments.

The FY 1987 request for Program Direction is $3.6 million. These funds are required to provide for the personnel costs of 53 full-time equivalents to direct, manage, and support these multidisciplinary research efforts.

Mr. Chairman, that concludes my testimony. I would be happy to answer questions.

Mr. VALENTINE. Thank you, Doctor.

Miss Schneider?

Miss SCHNEIDER. Dr. Trivelpiece, I am curious to know about some of the reference that I made earlier about the radon research, and I wonder if you can elaborate as to some of the priorities that have been established for radon research in the budget process.

Dr. TRIVELPIECE. There is a program, about $3 million, and some of that is devoted to trying to understand the path and the sources of where radon comes from and how it gets there, and, of course, the homes that are on the Reading Prong have some problems associated with that. And the other is, what are the health effects that are associated with radon, the kind of consideration of going into to do the epidemiology base to go into an area where there has been, perhaps, a radon-induced cancer death and to make measurements and to understand what the levels are, and to try to correlate the levels with the risk.

There is not a good dose-response data base for humans with respect to radon. It is clear that there is a risk, but the exact relationship of that risk is not well understood.

It is my understanding that the Environmental Protection Agency has asked for funds to do a study over many homes to make measurements of radon levels, and that is going on.

Also, one of the parts of our program is that there are not simple, cheap instruments which can be used to measure radon concentrations that could be made widely available, and so some research on instrumentation is going along, as well as sort of the ecology of radon in the ground where the materials go and how they get there and what causes it to be released.

Miss SCHNEIDER. Well, there are some rather inexpensive technologies. You say that there are not. I am aware of a cannister that costs $50, and the cannister and the lab report is all included in the $50 price. And I would think for a family to measure, or a workplace to measure, the degree of radon, $50 is pretty much of a bargain.

To what degree are you generating information to the general public about how they can measure or test radon levels in their own homes?

Dr. TRIVELPIECE. I am not aware of any effort to inform the public on how they might make the measurements. Perhaps Dr. DeLisi knows.

Dr. DELISI. I am not aware, either, of any efforts by the Department of Energy.

Miss SCHNEIDER. Don't you think that's a good idea?

Dr. TRIVELPIECE. Yes. These developments are recent, and I agree, it is a good idea.

Miss SCHNEIDER. Because I think one of the greatest frustrations I have is that we have identified problems on this committee and elsewhere. There is technology out there somewhere, and I think once we find the technology to measure or monitor, that it behooves us to inform the public as to how they can have access to that technology.

So, I would be very interested in whatever kind of feedback you can provide me with as to making that linkage between the need to solve the problem and the technological solutions to it.

But I would think that that ought to be part of the budgetary function of helping to solve the problem.

I have another question that relates to deforestation on the global perspective, and I understand that that comes under the purview of this particular program insofar as it relates to carbon dioxide problems.

Needless to say, we are aware of enormous clear-cutting taking place all around the world, and without sufficient reforestation, there is less carbon dioxide that is being trapped in some of the plant material.

I wonder if DOE is looking at any kind of policy recommendations that could be made to AID or to the World Bank in this area?

Dr. TRIVELPIECE. We have not approached this from a point of view of policy recommendations. Rather, the DOE program has been devoted to trying to understand the balance, the carbon cycles, carbon equation, where it goes to, what fraction goes into the ocean, how it is trapped there, and so on.

We have not really been in the policy part of this business, but more in the scientific end of it. So I don't know of any plans to make such type policy determinations. There are some reports, two of which have been issued, and two of which are about to be issued, which deal with the studies the last 6 or 7 years, and these are very extensive reports, and they contain the works of scientists, not only from the United States, but from around the world. I think those will be very important documents in aiding the policymakers to understand what the scientific basis of some of the concerns are. I think they are good reports in my brief review of them.

Miss SCHNEIDER. OK. Thank you very much.

Thank you, Mr. Chairman.

Mr. VALENTINE. Mr. Smith, do you have any questions?

Mr. SMITH. No questions.

Mr. VALENTINE. Dr. Trivelpiece, let me ask you just a couple of questions.

You testified, I believe, in 1985 before the Health and Environment Subcommittee in defense of the retention of the DOE responsibility over the radiation health effects program.

I would like to know what specific steps are being taken to improve the public credibility and information transfer in environmental and health activities. For example, you stated in written response to questioning during the Health and Environment Subcommittee hearing last November, as I stated, that measures to improve the perceived credibility gap include periodic meetings of DOE scientists with concerned workers, establishment of a hotline for direct access to these scientists, and publication of progress reports of studies in company newsletters—studies involving epidemiology.

What I want to ask you is: Are these measures being taken at all DOE facilities so far as you know?

Dr. TRIVELPIECE. I certainly know that they were done at Oak Ridge National Laboratory. I hope they are being done at the other facilities. If they are not, they will be.

Mr. VALENTINE. These measures now only, do they not, address the concerns of DOE workers, and you stated in your health and environment hearing last November that the public needs to be

persuaded that we are handling nuclear materials in a safe, effective and intelligent manner.

What do you propose, or how do you propose, to address the public concern, whether real or imaginary—the public concerns about the health impacts of radiation?

Dr. TRIVELPIECE. That's a very large question. I wish I could have a good answer to that. Certainly, we are not doing anything direct and constructive to solve that, but that kind of education, the information necessary for people to make up their mind and be informed on it, should be distributed in the educational system at all levels, both the technical information associated with it, as well as the risks that are related thereto.

We are not in the education business; we do make information available. I hope it does get into the public sector in an appropriate way, but, to some extent, we are enjoined from carrying out a campaign of the sort that your question would infer we ought to do.

Mr. VALENTINE. The EPA is also very involved with the radon problem. Given the limited resources made available by the administration, it is important that DOE and EPA and other agencies closely coordinate their radon programs. These are my questions: what are the major differences between the EPA program and the DOE program?

Dr. TRIVELPIECE. To the best of my knowledge, the EPA program is dedicated to going out and making measurements in a large number of residences in order to determine the distribution of radon in terms of the concentration as a function of different geographic locations and types of homes, and things like that.

Ours is more the concern that once it is there, what are the pathways into the human system? What are the consequences? What is the relationship on a dose-response basis between the level of radiation and the actual risk to which a human being is subject, and, as I said earlier, that information is very uncertain at the moment, and anything that we could do to reduce the uncertainty and improve the understanding of that dose-response curve would be important.

So we are functioning more in that end of the scientific aspect, as distinct from the data gathering with regard to distribution of radon.

Mr. VALENTINE. Is there any existing agreement or paper writing, whether it is called an agreement or whatever, which establishes each agency's primary responsibilities, so as to avoid conflict or duplication?

Dr. TRIVELPIECE. Not that I am aware of, any formal one, but I believe that the staffs of the respective agencies have talked, and that there is coordination at that level, but there is no formal memorandum of understanding that I am aware of.

It would be a good idea.

Mr. VALENTINE. Yes, I was going to say: wouldn't it be just almost impossible to do the job without some kind of set of rules or regulations, because with the change that has been alluded to here, it seems to me that you just don't have any chance to avoid this type of duplication without some kind of written document that says you should do this and you should do that. But you don't have that currently, do you?

Dr. TRIVELPIECE. I am informed that we are working on one, but I would also point out that in circumstances like this, where perhaps a treaty is required between two agencies, that OMB sometimes performs that function through the budget process without necessity of having a written document.

Mr. VALENTINE. Mr. Smith, do you have any other questions?

Mr. SMITH. No.

Mr. VALENTINE. Well, that's all that we have, and I want to say again to all of you that we thank you for taking the time to come here and be with us today.

Thank you very much.

Dr. TRIVELPIECE. Thank you, Mr. Chairman.

[Whereupon, at 3:30 p.m., the subcommittee adjourned, to reconvene subject to the call of the Chair.]

APPENDIX

ADDITIONAL STATEMENTS SUBMITTED FOR THE RECORD

TESTIMONY OF

SENATOR JOHN H. GLENN

DOE AUTHORIZATION/ENVIRONMENTAL PROGRAMS

BEFORE THE HOUSE COMMITTEE ON

SCIENCE AND TECHNOLOGY

SUBCOMMITTEE ON NATURAL RESOURCES, AGRICULTURE RESEARCH,

AND ENVIRONMENT

MARCH 6, 1986

Mr. Chairman:

Thank you for inviting me to testify on this most important subject, one which is of particular concern to citizens in every state where the Department of Energy (DOE) has a nuclear facility. In my own state of Ohio, there are three DOE facilities: the Feed Materials Production Center (FMPC) at Fernald, the Portsmouth Uranium Enrichment Complex at Piketon, and the Mound Laboratory at Miamisburg. Over a period of years a number of accidents and serious environmental contamination have occurred at these facilities. As a result of radioactive air releases in late 1984 from the Fernald facility, I requested that the GAO examine DOE's program to protect the environment and worker safety and health at the three Ohio facilities and to extend that study to all DOE facilities around the country. My own Governmental Affairs Subcommittee on Energy, Nuclear Proliferation, and Government Processes did an investigation and discovered that the releases of late 1984 at Fernald were just the tip of the iceberg. Other studies and investigations have provided evidence that serious environmental problems exist at Hanford, Savannah River, Rocky Flats, Oak Ridge, and other DOE facilities. The extent of these problems will be shown in the GAO report that I alluded to earlier which is scheduled to be ready sometime in May or June.

If the bad news is that the DOE and its predecessor organizations have been creating unnecessary risks to the health of the American people through poor environmental practices for many years, the good news is that the DOE is finally beginning to recognize its responsibilities in this area and to do something about them.

In an internal report by Dr. James S. Kane, University of California, in the early part of 1985, it is stated that "remedial action costs (for environmental site cleanup) could be in the range of billions of dollars". In addition, Dr. Kane stated "the most pressing problem I have found in the Department's treatment of safety and environmental matters is that they have been almost completely neglected by top management".

The Secretary of Energy has responded to this internal criticism announcing on September 18, 1985, several initiatives to strengthen its programs in the area of environment, safety, and health. These included the establishment of the new Office of Assistant Secretary for Environment, Safety, and Health which is now held by Ms. Mary Walker, who will be testifying before you this afternoon. I have asked GAO, as part of its general investigation into environment and safety matters at DOE, to examine the status of the 1985 initiatives. They have responded by issuing a fact sheet which I am releasing today, and which is appended to my testimony.

I will say at this time that the activities which are already beginning at DOE are welcome even if long overdue. For example, DOE intends to strengthen ES & H division's role and responsibilities in DOE operations and will issue six revised orders to facilitate this. The target date for issuing these orders has not been established and that is one of the things Assistant Secretary Walker should be asked about.

DOE has also begun technical safety appraisals of DOE nuclear facilities and are planning to begin comprehensive environmental surveys at DOE facilities. I am personally pleased that DOE will begin their environmental surveys in June at the FMPC in Fernald, Ohio. These surveys benefit not only the people of Ohio, but are applicable to all DOE nuclear sites across our nation. I am indeed grateful that DOE is now moving in the right direction. I am sure you join me in pledging support to see that DOE has not only the motivation but also the means, the Congressional support, to do the cleanup and future monitoring role that will guarantee not only production, but safety as well.

At this point there are two overall questions to be addressed. First, will the new office have the independence that was lacking in the old one, and will it have the clout that is needed in order to ensure that its concerns about environment, safety, and health are treated with the same seriousness as DOE's concerns about production? Secondly, will the Department of

Energy commit the resources that will be needed to do the environmental cleanup that is required as a result of 30 years of neglect? Aquifers have been contaminated with radioactive material and with hazardous substances, and there is no question that it will take years to mitigate these problems. But Gramm-Rudman notwithstanding, we cannot afford to cut back on this aspect of DOE's activity. We are producing nuclear materials supposedly to protect the American people and to keep them free. It would be ironic if we will have ended up poisoning people in the process.

So, I commend you for holding this hearing, Mr. Chairman, and I hope we can work together to ensure that the problems of the past with respect to environment, safety, and health are not repeated in the future, and that the effects of past transgressions are reduced to the point where they pose no risk.

Thank you very much.

United States General Accounting Office

GAO

Fact Sheet for the Ranking Minority Member, Subcommittee on Energy, Nuclear Proliferation, and Government Processes, Committee on Governmental Affairs, U. S. Senate

March 1986

ENVIRONMENT, SAFETY, & HEALTH

Status of Department of Energy's Implementation of 1985 Initiatives

GAO/RCED-86-68FS

UNITED STATES GENERAL ACCOUNTING OFFICE
WASHINGTON, D.C. 20548

RESOURCES, COMMUNITY, AND ECONOMIC DEVELOPMENT DIVISION

March 4, 1986

B-222195

The Honorable John Glenn
Ranking Minority Member
Subcommittee on Energy, Nuclear
Proliferation, and Government Processes
Committee on Governmental Affairs
United States Senate

Dear Senator Glenn:

On April 15, 1985, you asked us to review the Department of Energy's (DOE's) overall effectiveness in protecting worker health and safety and the surrounding environment at its defense facilities. In response to your request, we began work which would, among other things, examine DOE's environmental, safety, and health (ES&H) programs. On September 18, 1985, the Secretary of Energy announced several initiatives to strengthen these programs. Because these initiatives could make important changes in the way DOE headquarters and field offices conduct their ES&H activities, your office asked us to monitor the implementation of these initiatives and to brief you and your staff periodically on their status. Accordingly, we briefed your office on February 10, 1986, and agreed to provide you with this fact sheet highlighting, as of February 26, 1986, (1) the status of the September 1985 ES&H initiatives and (2) DOE's planned actions to complete the initiatives. In addition, we agreed to continue monitoring DOE's progress in implementing the initiatives as part of our ongoing review and planned report on DOE's overall ES&H activities at defense facilities.

The Secretary of Energy's initiatives are (1) reorganizing the ES&H activities at DOE headquarters, (2) revising ES&H orders, (3) conducting a major environmental survey of conditions at DOE sites, (4) carrying out major technical safety appraisals of conditions at DOE's nuclear facilities, (5) revising ES&H information reporting and tracking systems, (6) increasing environmental guidance, and (7) enhancing the professional development of ES&H staff. DOE's ES&H staff believe these initiatives can provide increased authority and additional information to enable them to more effectively oversee ES&H activities.

Overall, we found that, as of February 26, 1986, DOE has focused its attention on implementing the first four initiatives. First, it has essentially completed reorganizing the headquarters ES&H function. The reorganization elevates ES&H responsibilities to the Assistant Secretary level from its previous Deputy Assistant Secretary level, creates a new position of Deputy Assistant Secretary for Environment, and establishes a new Office of Environmental Audit and Compliance. Second, DOE has revised but not yet issued six department-wide orders that DOE ES&H officials believe provide the organization with additional authority in ES&H matters. Third, DOE has developed preliminary plans outlining the scope, methodology, and tentative schedules for performing the environmental survey and technical safety appraisals. As of February 26, 1986, field work has started for the technical safety appraisals but not for the environmental survey. The survey and appraisals are tentatively scheduled to be completed by late 1988 and early 1989, respectively. Fourth, DOE is in the early stages of conceptualizing how it will implement its three remaining ES&H management and professional development initiatives.

We interviewed headquarters ES&H officials to determine DOE's purpose, status, and plans for each of these initiatives. To develop more specific information on DOE's comprehensive environmental survey and technical safety appraisals, we reviewed DOE memoranda and plans discussing their scope, methodology, and schedules. To develop an overall perspective on the need for and potential implications of the initiatives, we relied on our continuing work in the ES&H area and on previous GAO reports concerning DOE's ES&H program, as well as reviewed an April 1985 DOE study discussing the need for ES&H organizational changes.

We discussed the material presented in this fact sheet with DOE officials and incorporated their views as appropriate. We are sending copies to the Chairman, House Science and Technology Committee; the Chairman, Subcommittee on Natural Resources, Agriculture Research, and Environment, House Science and Technology Committee; DOE; and other interested parties. If you have any questions regarding this fact sheet, please call me at 275-1441.

Sincerely yours,

Keith O. Fultz

Keith O. Fultz
Associate Director

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ABBREVIATIONS

DOE	Department of Energy
ES&H	Environment, safety, and health
GAO	General Accounting Office

SECTION 1:

REORGANIZE ES&H ACTIVITIES

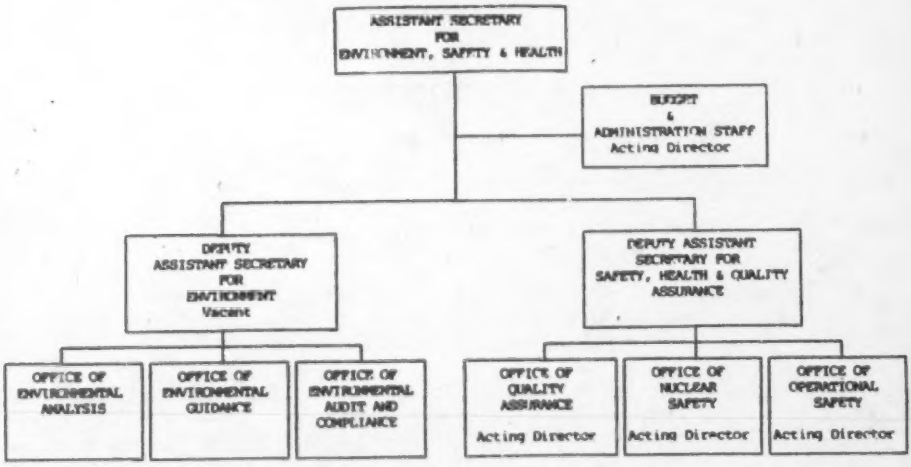
PURPOSE: To consolidate and update the ES&H function within DOE

STATUS:

- The Secretary of Energy has approved ES&H's revised organizational structure (see fig. 1).
- 116 ES&H staff positions are filled. (A total of 128 positions are authorized and additional positions may be requested.)
- Target dates for filling vacancies and/or appointing office directors have not been established.

Figure 1:

ES&H's Revised Organizational Structure


ASSISTANT SECRETARY FOR ENVIRONMENT, SAFETY & HEALTH
BUDGET & ADMINISTRATION STAFF Acting Director
DEPUTY ASSISTANT SECRETARY FOR ENVIRONMENT Vacant
DEPUTY ASSISTANT SECRETARY FOR SAFETY, HEALTH & QUALITY ASSURANCE
OFFICE OF ENVIRONMENTAL ANALYSIS
OFFICE OF ENVIRONMENTAL GUIDANCE
OFFICE OF ENVIRONMENTAL AUDIT AND COMPLIANCE
OFFICE OF QUALITY ASSURANCE Acting Director
OFFICE OF NUCLEAR SAFETY Acting Director
OFFICE OF OPERATIONAL SAFETY Acting Director

DOE'S PLANNED ACTIONS:

- Appoint Deputy Assistant Secretary for Environment.
- Appoint directors for budget and administration and for offices of nuclear safety, operational safety, and quality assurance.
- Fill unstaffed positions as soon as possible.

SECTION 2:

REVISE ES&H ORDERS

PURPOSE: To redefine and strengthen ES&H's oversight role and responsibilities in DOE operations

STATUS:

- ES&H's Assistant Secretary has approved six draft ES&H orders for DOE-wide coordination and review.
- The six orders being revised address
  - --environmental, safety, and health programs for DOE operations (Order 5480.1A). This order delineates DOE headquarters' and field offices' responsibilities for implementing DOE's ES&H programs.
  - --safety of reactors and other nuclear facilities (Orders 5480.5 and 5480.6). These orders set forth controls for preventing nuclear accidents and releases of radioactive material.
  - --preparation and review of safety analysis reports (Order 5481.1B). This order establishes DOE's requirements for reports that identify potential safety hazards at facilities and evaluate alternative actions to eliminate or mitigate these hazards.
  - --the ES&H appraisal process (Order 5482.1B). This order establishes a hierarchical system of reviews for evaluating the ES&H performance of contractors and field offices.
  - --quality assurance requirements (Order 5700.6B). This order assigns responsibilities for establishing, implementing, and maintaining programs intended to optimize equipment reliability and personnel performance at all facilities.
- The target date for issuing the revised orders has not been established.

DOE'S PLANNED ACTIONS:

- Forward revised orders to DOE's Management and Administration staff for DOE-wide coordination and review.

- Circulate orders to DOE program and field offices for their comments.
- Resolve any problems.
- Issue revised ES&H orders.

SECTION 3:

CONDUCT COMPREHENSIVE ENVIRONMENTAL SURVEY OF DOE FACILITIES

PURPOSE: (1) To identify any specific environmental problems existing at DOE facilities and (2) to set priorities for necessary corrective action

STATUS:

- ES&H's Office of Environmental Audit and Compliance will lead environmental surveys of 41 nuclear and nonnuclear DOE sites. According to ES&H's Director, Office of Budget and Administration, these sites include all DOE operating facilities.
- The office has developed a draft management plan describing the survey's purpose, scope, and general methodology.
- The survey will be conducted by five teams. One of the five team leaders has been selected.
- The first site survey will be conducted in June 1986 at the Feed Materials Production Center, Fernald, Ohio. The schedule for remaining facilities has not been completed.
- The target date for issuing the survey's comprehensive report is late calendar year 1988. Interim reports will be issued as work is completed at each site.

DOE'S PLANNED ACTIONS:

- Complete selection of environmental survey personnel.
- Obtain ES&H Assistant Secretary's approval of survey's final schedule.
- Complete the management plan describing the survey's purpose, scope, and general methodology.
- Begin site surveys in June 1986.
- Issue interim reports identifying environmental problems that require immediate attention as well as problems that can be addressed long-term.
- Issue survey's comprehensive report on work at 41 sites.

SECTION 4:

CONDUCT TECHNICAL SAFETY APPRAISALS OF DOE NUCLEAR FACILITIES

PURPOSE: (1) To identify any specific health and safety problems existing at DOE nuclear facilities and (2) to set priorities for necessary corrective action

STATUS:

- ES&H's Office of Nuclear Safety will lead technical safety appraisals of 51 of DOE's nuclear facilities located at 11 sites. According to the office's director, the 51 facilities include all DOE reactors plus other nuclear facilities that DOE has designated as "high hazard."
- The Office has developed a draft management plan describing the appraisals' purpose, scope, and general methodology.
- Appraisals will be carried out by four teams. All members of the team conducting the first appraisal have been selected.
- The on-site work for the first appraisal is scheduled to be completed at Richland Operations Office's Fast Flux Test Facility on March 7, 1986. The schedule for remaining facilities has not been completed.
- A comprehensive report on all appraisals is scheduled to be issued early in calendar year 1989. Interim reports will be issued as work is completed at each site.

DOE'S PLANNED ACTIONS:

- Complete selection of members for the three remaining appraisal teams.
- Obtain ES&H Assistant Secretary's approval of appraisals' final schedule.
- Complete the management plan describing appraisals' purpose, scope, and general methodology.
- Issue interim reports identifying health and safety problems that require immediate attention as well as problems that can be addressed long-term.
- Issue comprehensive appraisal report on work at 51 facilities at 11 sites.

SECTION 5:

REVISE FIELD REPORTING AND

INFORMATION TRACKING SYSTEM

PURPOSE: To develop an information system that DOE headquarters can use to monitor ES&H problems at facilities and the corrective actions taken

STATUS:

- ES&H's Office of Budget and Administration is responsible for developing the system.
- ES&H's Director of Budget and Administration has appointed a task force (1) to define the type of information needed and (2) to develop the system. Task force members have been appointed and have started their work.
- The tentative target date for operating the new system is October 1986.

DOE'S PLANNED ACTIONS:

- Finish definition of ES&H's information needs.
- Complete development of an information system.

SECTION 6:

INCREASE ENVIRONMENTAL GUIDANCE

PURPOSE: To provide DOE program and field offices with additional and clearer environmental guidance to meet regulatory deadlines

STATUS:

- ES&H's Director, Office of Environmental Guidance, has instructed his staff to identify and set priorities by mid-March 1986 on:

  --existing DOE environmental guidance that the office should clarify, and

  --emerging regulatory issues (e.g., radioactive and hazardous waste clean-up standards) that might affect DOE.

- The director has also developed new DOE-wide procedures for commenting on emerging regulatory issues.

- The target date for issuing additional guidance has not been established.

DOE'S PLANNED ACTIONS:

- Complete the effort to identify and set priorities on environmental guidance and regulatory issues for the office.

- Develop additional environmental guidance as appropriate.

SECTION 7:

ENHANCE PROFESSIONAL DEVELOPMENT

PURPOSE: To assure the continued professional competence of ES&H staff

STATUS:

- ES&H's Director of Budget and Administration is responsible for coordinating professional development activities.
- To date, according to the director, ES&H's efforts to enhance professional competencies have centered on (1) hiring additional staff with specialized ES&H skills and experience to fill the organization's vacancies and (2) assigning existing staff to new subject areas to broaden their technical experience.
- According to the director, DOE intends to develop a plan setting forth specific ES&H training needs and other professional development activities to enhance staff competencies.

DOE'S PLANNED ACTIONS:

- Develop and implement a plan to enhance headquarters and field professional competencies.

(301705)

Record

Statement for the Record of Donald L. Bauer
Acting Assistant Secretary for Fossil Energy
Department of Energy
to the
Subcommittee on Natural Resources, Agriculture
Research & Environment
Committee on Science and Technology
March 6, 1986

Mr. Chairman and Members of the Committee:

As part of its FY 1987 budget proposal for Fossil Energy-related programs, the Department of Energy is requesting $1.2 million for the Liquefied Gaseous Fuels Spill Test Facility. The facility, now being readied for its initial tests, will serve as a "test bed" for both industry and government in developing safety and environmental control information on the potential hazards of liquefied gaseous fuels and other toxic liquids should they be accidentally released during commercial transport, manufacturing, or storage.

Construction of the estimated $7.9 million facility began in June 1984. Located on an isolated section of the Frenchman Flat Basin in the southeast corner of the Nevada Test Site, the facility was completed in December 1985 and is now undergoing a series of checkout tests to ensure that all equipment and instrumentation function properly.

The first test "window" -- a time when actual spills can be conducted as dictated by local weather patterns -- will open in April 1986 and extend through September 1986. This will allow two to three series of tests, each series consisting of four to five spill tests.

Commercial user fees will cover actual costs of the tests plus any clean-up necessary to prepare the facility for the next user.

FACILITY DESCRIPTION

The facility consists of a control building housing data acquisition and recording instruments, a command and control computer, and a tank farm and spill area. The tank farm includes the following: (1) A spherical shaped 8,000-gallon tank to house liquid nitrogen, (2) a nitrogen vaporizer to convert liquid nitrogen to a drive and control gas, (3) pressure vessels to store the nitrogen gas, (4) a 26,000-gallon tank to store noncryogenic fluids for spill tests, (5) two 28,000-gallon dewars for storage of cryogenic test fluids, and (6) two twelve-inch diameter insulated lines and one six-inch diameter insulated line, all extending 500 feet from the tank farm to a point where fluids will be spilled for testing.

When spill tests are conducted, gaseous nitrogen (obtained by vaporizing the liquid) will force the test fluids from their storage tanks through the spill lines. Spill rate and duration, as well as test condition parameter checks, will occur under computer control from the control building. Also, 700 channels of data originating from remotely located sensors will be recorded.

POTENTIAL USERS

The ultimate objective of the Liquefied Gaseous Fuels Spill Test Facility is to give both private and public sector users the technical data they need to better protect the public from the potential health and safety hazards posed by a spill of liquefied gaseous fuels or other toxic liquids. An aggressive effort, therefore, has been undertaken to apprise relevant sectors of the fuels, chemicals and transportation industries of the availability of this one-of-a-kind test facility. This effort has extended both to domestic and to international organizations that have an interest and need for safety related data on liquefied gaseous fuels or toxic chemicals.

Currently, test plans, agreements, and operational procedures are being negotiated between the Energy Department and the Gas Research Institute and the Department of Transportation. These tests, slated for calendar year 1986, will help evaluate the effectiveness of "vapor fences" in mitigating the accidential releases of liquefied natural gas at peak shaving plants. Specifically, the tests this year will assist in validating wind tunnel simulations of vapor fence effects on heavy gas dispersion. Once validated, the wind tunnel models will be used to determine the vapor fence performance for several different accident scenarios.

Also being negotiated are tests to be funded by Amoco Oil Corp. to obtain downwind concentration measurements for hydrogen fluoride gases. This will help verify atmospheric dispersion models. Phase I of the test series is scheduled for calendar year 1986 and will consist of 3 to 5 tests to examine downwind concentrations when hydrogen fluoride is released in a horizontal jet and when it evaporates from a pooled spill.

FY 1987 BUDGET PROPOSAL

The $1.2 million requested for Fiscal Year 1987 will provide a bridge from the current DOE check-out and facility verification program to one supported by industry and other government agencies. It will provide the fiscal flexibility to assure that the facility is available and ready for user-sponsored tests. A minimum number of key scientific personnel would be retained to assess proposed test plans, to aid in the conduct of tests, to collect data, and to analyze test results.

Also, funding will be used to organize activities required for facility check-out, start-up and operation, in order to establish credibility with potential customers.

Once demand for service is established, current plans call for the costs of the core research team and other services to be financed by user payments. Based on experience with current customers, we anticipate that by Fiscal Year 1988, users of the test facility will be paying for all facility-related expenses.